Drug Testing, Tested Remedies and Medical-Literary Genres in Medieval Islam[1]

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Abstract: Along with different kinds of theoretical manuals on medicine and pharmacology, medieval Islam also produced other types of writings directly associated to everyday medical experience and therapeutics. Medieval Islamic medical literature also includes collections of clinical records, prescriptions for particular patients, consultations by letter, and medical recipe books, some of them genres also found in the western medical tradition. For the first time, this article addresses specifically the medical-literary genre of medical recipe books in medieval Islam. The analysis of four works from al-Andalus is framed within a general overview of other genres linked to first-hand medical experience and hands-on therapeutics as a context. Drug testing and tested remedies are also discussed in an attempt to provide a comprehensive view of actual medical practice in medieval Islam.

Keywords: Drug testing; Tested remedy; Medical Practice; Hands-on Therapeutics; Medical-Literary Genres; Clinical Record; Case History; Medical Prescription; *Consilia*; *Tajārib*; *Mujarrabāt*; *Khawāṣṣ; Aqrābāḏīn*; Medical Recipe Books; Ibn Muḥammad al-Sūsī; Ibn Wāfid; Al-Shaqūrī; Al-Shafrah; Al-Andalus; Medieval Islamic Medicine.

Throughout his recent book on present day medicine, *Medical Nihilism*, Jacob Stegenga convincingly argues that we should have little confidence in the effectiveness of medical interventions and that methods employed by clinical scientists to test new treatments «are, in practice, not nearly as good as they are often made out

1. This essay is dedicated to the primary care provider Juan Manuel Gómez Aguinaga, MD, for his selfless dedication to provide professional assistance during the Covid-19 pandemic in Madrid. I wish to thank Emilie Savage-Smith, Gonzalo Carrasco and Ahmed Salem Ould M. Baba for reading the draft of this essay and providing useful insights. None of them or the journal necessarily share the ideas stated in this essay, and any mistake is exclusively mine.

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to be».[2] In other words, whereas there is a systematic overestimation of new treatments' effectiveness, a dispassionate look at biomedical publications and other evidences indicate that in many instances they are barely effective, if scientific at all. Medical scepticism has a long history, but for the purpose of this essay, it is interesting to note that, as far as the effectiveness of scientific therapy is concerned, a comparable incredulity already existed in al-Andalus (Muslim Spain) nine centuries ago as attested by the view of the Cordoban philosopher and polymath Ibn Ḥazm (d. 1064) with regard to Hippocratic-Galenic medicine, which was the scientific medical paradigm of his time. Indeed, he expressed his scepticism about learned medicine through a very basic argument, brought to light by Miquel Forcada a few years ago and which this scholar summarises as Ibn Ḥazm's observation of the fact that the utility of medieval scientific therapeutics was the same as not having any treatment at all and the same goes for any other type of healing practice.[3]

2. Jacob Stegenga, *Medical Nihilism*. Oxford: Oxford University Press, 2018, p. 1. Focusing on the most widely prescribed types of therapies in recent generations, this author offers a compelling analysis of presumed biomedical progress and the research methodology, deemed scientific, employed to back it up. His view from the perspective of philosophy of science is supported by an increasing number of claims by health care professionals and biomedical researchers regarding expectations — more than actual cures — raised by science's marketing: indeed, while novel technological advances come with the promise and unabated hope of new treatments to cure present diseases, the truth is that medical innovations have yielded very limited results. In addition to the critical arguments by physicians and epidemiologists cited by the author in p. 5, see for instance the editorial, «Publication records versus scientific progress», *The Lancet Neurology*, 19 (February 19, 2020), p. 101; Seamus O'Mahony, «After the Golden Age: What is Medicine for?» *The Lancet*, 393 (May 4, 2019), 1798-1799; and Iain Chalmers, Andrew D. Oxman, Astrid Austvoll-Dahlgren, *et al*.,«Key Concepts for Informed Health Choices: A framework for helping people learn how to assess treatment claims and make informed choices», *BMJ Evidence-Based Medicine*, 23 (2018), pp. 29-33 (https://ebm.bmj.com/content/23/1/29), which gives access to the page *Testing Treatments interactive. Promoting critical thinking about treatment claims* (www.testingtreatments.org/) and makes another book originally published in 2006 freely available in a number of languages: I. Evans, H. Thornton, I. Chalmers, *et al*. *Testing treatments: better research for better healthcare* (2nd ed. London, 2011).

3. Miquel Forcada, *Ética e ideología de la ciencia. El médico-filósofo en al-Andalus (siglos x-xii)*. Almería: Fundación Ibn Ṭufayl de Estudios Árabes, 2011, pp. 117-119. Namely, Ibn Ḥazm observed that the rural population overcame their ailments without the assistance of a physician and that the remedies they employed — if any — were condemned by learned physicians. For a biography and description of works by this philosopher, historian, theologian, jurist and author of the

With regard to the assessment of pharmacological remedies, drug testing was not an alien notion in the Middle Ages. It was known or discussed either to determine substances' medicinal properties, to validate a new formula or to assess the process of preparation which made it more effective. Yet the attempts to evaluate and improve pharmacological cures — and to find new ones — was not restricted to academically trained physicians, but was carried out by a broad range of practitioners and healers, or even patients themselves. Nevertheless, however primitive they may seem today in the absence of modern measuring instruments, meticulous theoretical rules were developed for experimentation and evaluation of remedies within the complexities of the humoral medical system. Notably, the formulation and enlargement of Galen's protocol for testing medicines by Ibn Sīnā (d. 1036) described in his *Qānūn* was later adopted and improved in the western medical tradition. No matter how dubious it seems that this sophisticated methodology to test remedies was actually ever put into practice, as a premodern formal system thoughtfully devised, it has little to envy present day biomedical research methodology aside from its technological support.

As noted by the scholars Elaine Leong and Alisha Rankin, the most visible development in drug testing practices throughout time was the increased and more detailed reporting from the Renaissance onwards.[4] Prior to that, some medieval physicians and practitioners also recorded their experience, prescriptions, remedies that– in their minds — had proved to be effective and standard formulas which were considered of therapeutic value. This material gave rise to several typologies of medical texts such as collections of clinical records, compilations of prescriptions for actual patients, *experimenta*, *consilia*, *observatione*, note books, medical recipe books, apothecary's registers of physicians' prescriptions dispatched to patients, books of secrets in the West or compilations of *khawāṣṣ* in medieval Islam. Although some of these early medical-literary genres have left few textual traces in comparison with later time-periods, this kind of medical literature is a necessary

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well-known poetical work *The Ring of the Dove* (on the art and practice of Arab love) in the Cordoban caliphate, see José María Puerta Vílchez and Rafael Ramón Guerrero, «Ibn Ḥazm, Abū Muḥammad», in J. Lirola Delgado and J. M. Puerta Vílchez (eds.), *Biblioteca de al-Andalus*, 7 vols. and 1 supplement. Almería: Fundación Ibn Ṭufayl, 2004-2012 (thereafter *Biblioteca de al-Andalus*), vol. 3, pp. 392-443.

4. Elaine Leong and Alisha Rankin, «Testing Drugs and Trying Cures: Experiment and Medicine in Medieval and Early Modern Europe», *Bulletin for the History of Medicine*, 91(2017), p. 172-178.

and inherent complement to theoretical therapy handbooks, pharmacological texts on simple and compound drugs, formularies, lists of substitutes and synonyms, and botanical works. Scholarship has progressively paid attention to some of those lesser known genres within medieval western medical literature, but as far as medieval Islam is concerned, some of them still are an understudied type of source. This is the case, for instance, with medical recipe books, an example of which — the Arabic edition of Ibn Muḥammad al-Sūsī's compilation — is included in this volume.

The aim of this essay is to address for the first time this particular medical-literary genre within the wider context of medieval Islamic medicine as a basis for future studies. However, issues concerning drug testing and tested remedies will also be discussed as complementary topics so as to attempt a comprehensive view of actual medical practice and therapeutics in this time-period. In this respect, while keeping in mind the need to approach these issues in their own historical context, it is also my intention to establish continuities of certain aspects of health care and medical practice of the past with those of the present. Divided into four sections, the first part of this essay addresses drug testing; the second deals with testing treatments and tested remedies– that is, with methods employed in medieval Islam to assess a therapy's effectiveness and actual evidence of treatment success. The third part is a literary review of medical-literary genres associated with first-hand medical experience and hands-on therapeutics. The fourth section is devoted to the analysis of four medical recipe books from al-Andalus, followed by the concluding remarks. As a whole, this essay does not intend to be exhaustive, but rather to provide a general overview from a bird's eye view, and it necessarily encompasses the medieval western medical tradition in an attempt to frame the issues and sources discussed within their scientific, social, historical and/ or literary contexts. This essay is also intended for readers not familiar with medieval Western or Islamic medicine, or for that matter, with the history of medicine as a whole. Furthermore, it should be remembered throughout that the humoral theory of disease that stands at the basis of Greco-Roman medicine was also deeply ingrained in other forms of Islamic healing practices, such as the medical system known as Prophetic Medicine, written by religious scholars particularly from the fourteenth century onwards but known to have been composed as early as the ninth century.[5]

5. See Emilie Savage-Smith, «Were the Four Humours Fundamental to Medieval Islamic Medical Practice?», in P. Horden and E. Hsu (eds.), *The Body in Balance: Humoral Medicines in Practice*. New York, Oxford: Berghahn Books, 2013, p. 89.

However, mastering Greco-Roman medicine was an indispensable requisite to become a medieval Islamic learned physician. What has primarily been studied so far are the medical treatises written by such physicians. Therefore, although medieval Islamic medicine undoubtedly entailed a broad range of healing practices, this essay deals with the scientific, rational and learned medicine based on the humoral medical paradigm.

1. Drug Testing in the Middle Ages

As mentioned in the introduction, some medieval physicians thoughtfully devised, discussed and refined a theoretical protocol to determine drugs' properties.[6] They didn't start *ex novo*, for as with so many other medical issues, Galen (d. ca. 200/216 A.D.) had already paved the path. Like anything else within the humoral medical paradigm, medicinal substances (including foodstuffs) are composed of the four

6. For a translation of Ibn Sīnā's testing protocol, see Mona Nasser, Aida Tibi, and Emilie Savage-Smith, «Ibn Sīnā's *Canon of Medicine*: 11th-Century Rules for Assessing the Effects of Drugs», *Journal of the Royal Society of Medicine*, 102 (2009), 78-100. For an analysis of Ibn Sīnā's discussion of the Aristotelian method of induction and experimentation, see Jon McGinnis, «Scientific Methodologies in Medieval Islam», *Journal of the History of Philosophy*, 41.3 (2003), pp. 307-327. As general overviews on medieval Islamic pharmacology and its development, see Danielle Jacquart, «Islamic Pharmacology in the Middle Ages: Theories and Substances», *European Review*, 16.2 (2008), pp. 219-227, and Peter E. Pormann, «The Formation of the Arabic Pharmacology Between Tradition and Innovation», *Annals of Science*, 68.4 (2011), pp. 493-515. For a thorough description concerning the development and refinement of Avicenna's rules at Montpellier, see Michael McVaugh, «Determining a Drug's Properties: Medieval Experimental Protocols», *Bulletin for the History of Medicine*, 91 (2017), 183-209. For the discussion of Avicenna's testing procedure in the first half of fourteenth-century Italy, see Joël Chandelier, «Expérience, expérimentation et connaissance dans la médecine scolastique italienne du 14e siècle», in Thomas Bénatouïl et Isabelle Draelants (eds.), *Expertus sum. L'expérience par les sens dans la philosophie naturelle médiévale*. Florence: Sismel, Edizioni del Galluzzo, 2011, pp. 385-403. Also, although based in the Latin translation, another description of Ibn Sīnā's discussion of the principles of pharmacology and, more particularly, for a detailed analysis of the formal organisation of information, see Iolanda Ventura, «Classification Systems and Pharmacological Theory in Medieval Collections of Materia Medica: A Short History from the Antiquity to the End of the 12th Century», in Tanja Pommerening and Walter Bisang (eds.) *Classification from Antiquity to Modern Times. Sources, Methods, and Theories from an Interdisciplinary Perspective*. Berlin: De Gruyter, 2017, pp. 135-156.

elements (fire, air, water and earth); each one is assigned a pair of primary qualities (hot-cold, dry-moist) in varying degrees of intensity on a scale from 1 to 4, namely, not causing a perceptible change in the body, causing a perceptible change, causing an intense change, and operating a change at its highest intensity. Greco-Roman — and, by extension, Islamic — medical theory had developed a complex scheme of correspondences between humours, primary qualities and temperaments on the one side, and seasons, age, sex, colours, tastes, smells, zodiacal signs, etc. on the other. Although not everyone's sensory perception was strictly trustworthy, these correspondences (mainly taste, colour and smell) provided physicians with a logical procedure to infer rationally whether a medicine caused a heating, cooling, drying or moistening effect on the body's complexion, as well as to what degree, supported by logical considerations and deduction (*via rationis*). Yet, in opposition to the Aristotelian inductive method, Galen also envisaged another rational method to achieve the same goal: to determine the primary qualities of a simple drug by testing its effects on a research subject under controlled conditions (*via experimentis*). He set up a rather primitive procedure according to four basic rules, which would be thoughtfully expanded and refined by some medieval physicians.[7]

In recent decades, historical scholarship has adequately described the «medieval stage» of the history of pharmacological testing. However, it is imperative to start with two important considerations. The first one is the fact that, as opposed to modern biomedical research, medieval physicians did not seek to determine a drug's property as a universal cure for a given illness, but to determine their primary qualities and how to measure rationally the exact degree of intensity of a drug so as to accord with the strength of a given patient's illness. In other words, in the medieval analytical framework, testing what kind of immediate effect a medicine had in the body did not imply employing it to cure a particular illness whenever and wherever it might occur. A second relevant consideration to remark upon — valid both for the western and the Islamic medical traditions — is that, even if medieval testing protocols were theoretically designed to be used, there is no evidence that they were actually ever carried out, at least not in a systematic way.[8] Ibn Sīnā's *Qānūn* was an extremely influential work both in the East and the West, yet his theory of the procedure for drug testing didn't seem to have any

7. For the Galenic contribution, see McVaugh, «Determining a Drug's Properties...», pp. 184-185, 187 and 195.

8. McVaugh, «Determining a Drug's Properties...», p.209.

impact amongst well-known medieval Islamic medical theoreticians — like al-Kindī's theory of degrees for compound drugs — beyond perhaps very isolated instances or beyond physician-philosophers such as Ibn Rushd (d. 1198), or commentaries of the *Qānūn* — in both latter instances, a matter still to be assessed. Unless a study of medieval Islamic medical sources should in the future reveal that this particular issue was addressed more frequently and that it has simply passed unnoticed to scholarship until now, as far as is known, Ibn Sīnā's eleventh-century contribution to the scientific methodology of drug testing did not generate the interest in medieval Islam as it did later in the Latin medical tradition. On the other hand, with regard to medieval Europe, as Michael McVaugh has consistently argued, such test procedures to determine the effect and dosage of a medicine was laborious, time-consuming and difficult to do correctly, and in practice, the easier and quicker option of inferring the qualitative nature and intensity of a drug through reasoning from sensory attributes like taste and colour seem to have been preferred.[9] That said, what was Ibn Sīnā's method to determine the qualitative changes a simple or compound drug would produce within the body?

Ibn Sīnā's *Qānūn fī l-ṭibb* is divided into five books. Book I concerns basic medical and physiological principles as well as anatomy, regimen and general therapeutic procedures; Book II deals with principles of theoretical pharmacy and *materia medica*; Book III covers the diagnosis and treatment of diseases specific to one part of the body; Book IV is devoted to conditions not specific to one bodily part, and Book V is a formulary of compound remedies.[10] The basic theoretical knowledge any physician should possess about simple remedies is explained in the first summary or treatise (*jumlah*) of Book II, which in turn is divided into six chapters (*maqālah*) that respectively address: 1) the nature and complexion of simple medicines, 2) how to identify and recognize properties and effects of simple remedies by experimentation (*via experimentis*), 3) how to identify and recognize the same properties rationally (*via rationis*), 4) the therapeutic actions of simple remedies, 5) the external circumstances that influence and transform the effects of medicines, and 6) the correct ways to collect and preserve

9. McVaugh, «Determining a Drug's Properties...», pp. 183 and 208-209.

10. Emilie Savage-Smith, «Medicine», in R. Roshdi (ed.) *Encyclopedia of the History of Arabic Science*, 3 vols. London and New York: Routledge, 1996, vol. 3, pp. 921-925.

the medicaments.[11] Borrowing Aida Tibi's invaluable translation into English, thus, in the second chapter, «On knowledge of the potency of drugs through experimentation», Ibn Sīnā states that one «can tell the potency of drugs in two ways, by analogy (*qiyās*) and by experiment (*tajribah*)», and that «experimenting leads to knowledge of the potency of a medicine with certainty after taking into consideration certain conditions». Then the seven rules that need to be taken into account follow:

(1) The drug must be free from any acquired quality: this can occur if the drug is exposed to temporary heat or cold, if there is a change in the essence of the drug, or if the drug is in close proximity to another substance [...].
(2) The experiment must be done on a single, not a composite, condition. In the latter case, if the condition consists of two opposite diseases and the drug is tried and found beneficial in both, we cannot infer the real cause of the cure [...].
(3) The drug must be tested on two contrary conditions. If it is effective on both, we cannot judge which condition benefited directly from the drug. [...].
(4) The potency of the drug should be equal to the strength of the disease [...] So it is best to experiment first using the weakest [dosage] and then increase it gradually until you know the potency of the drug, leaving no room for doubt.
(5) One should consider the time needed for the drug to take effect. If the drug has an immediate effect, this shows that it has acted against the disease itself. If its initial effect is contrary to what comes later, or if there is no initial effect at first and the effect shows up later, this leads to uncertainty and confusion [...].
(6) The effect of the drug should be the same in all cases or, at least, in most. If that is not the case, the effect is then accidental, because things that occur naturally are always or mostly consistent.
(7) Experiments should be carried out on the human body. If the experiment is carried out on the bodies of [other animals] it is possible that it might fail [...].[12]

11. Ibn Sīnā, *Al-Qānūn fī l-ṭibb*, 3 vols. Beirut: Dār al-Ṣādir, *s.d.*, I, pp. 222-239. The second summary or *jumla* contained in Book II (devoted in its entirety to simple drugs or *materia medica*) is a collection of around 760 substances ordered according to the Arabic alphabet and described following a given pattern. Pormann, «The Formation of the Arabic Pharmacology...», p. 504, and Ventura, «Classification Systems and Pharmacological Theory...», p. 136.

12. Nasser, Tibi, and Savage-Smith, «Ibn Sīnā's *Canon of Medicine*: 11th-Century Rules for Assessing the Effects of Drugs», pp. 79-80. Ibn Sīnā, *Al-Qānūn fī l-ṭibb*, I, pp. 224-226.

Although Galen's rules are not always clear or are at best implicit, in Ibn Sīnā's protocol only the second and the seventh rules seem an original contribution,[13] that is, making sure that the patient does not suffer from more than one disease and testing the drug's effect on human subjects. Both of them address the need to control confounding and contingent factors that may bias the knowledge derived from the test. However, beyond the text partially quoted above, a broader analysis of Ibn Sīnā's work reveals that another innovation was the idea that the imperceptible effect produced by a first-degree medicament would become visible if repeatedly administered.[14] Likewise, Ibn Sīnā went beyond Galen's examination of primary qualities and reshaped pharmacological theory and practice by widening the discussion and including concepts of complexion, qualities, and effects, as well as providing not just a list of therapeutic properties and effects, but a rational associative system of classifying them.[15] Also, with regard to al-Kindī's theory, Ibn Sīnā defends — like Galen — the impossibility of accurately measuring the effect of a compound drug, for it acts through its whole form or substance, and thus, its effect cannot be rationally predictable, but can only be discovered empirically.[16] According to Jon McGinnis, Ibn Sīnā's theory would not only emphasize the need to set out carefully the conditions under which experimentation must take place, but it also establishes the tentativeness of scientific discoveries in the face of new observations.[17]

If Ibn Sīnā refined Galen's procedure to test the effect of simple drugs in the first quarter of the eleventh-century, his outline of the ideal protocol would become the topic of an even more sophisticated discussion at the medical school of Montpellier, in southern France, at the beginning of the fourteenth century. According to McVaugh, in a work composed by 1303, Bernard de Gordon added with regard to the first rule that «the [drug] specimen to be tested must be not only temperate, but pure and uncontaminated», an idea that neither Galen nor Ibn Sīnā made explicit. Similarly, his protocol's design involved measuring a medicine's absolute qualitative nature by way of a universal standard, not particular cases of illness. With regard to the subject on which to test a medicine, however, Bernard de Gor-

13. McVaugh, «Determining a Drug's Properties...», pp. 185-186.

14. McVaugh, «Determining a Drug's Properties...», p. 187.

15. Ventura, «Classification Systems and Pharmacological Theory...», pp. 152-157.

16. Jacquart, «Islamic Pharmacology in the Middle Ages...», pp. 223-225; Ventura, «Classification Systems and Pharmacological Theory...», p. 152.

17. McGinnis, «Scientific Methodologies in Medieval Islam», p. 308.

don was akin to modern scientific standard of experimenting first on animals (more precisely, on birds and then on dumb animals), followed by testing it in hospitals and eventually on lesser brethren in case the drug is poisonous,[18] which somehow echoes a bioethical thought of avoiding potential harm to healthy subjects but nevertheless, from another perspective, also begins to approach modern practice.

Yet it was Arnald of Vilanova who more thoughtfully developed the protocol. He had addressed the matter much earlier, but it was in his *Speculum medicine* — written in 1307-8 for the king of the Crown of Aragon — when he carefully refined the rules to guide the experimental test of simple drugs in order to assess — or even discover — their properties. With regard to Ibn Sīnā's seventh precept, he advocated conducting the test only on humans, but went further in specifying temperate and healthy ones. Moreover, Arnald of Vilanova also rejected that the physician test it on himself since he is «an agent of the public good» and is «of more value to the community than middling or lesser figures».[19] In terms of pure scientific progress, Arnald of Vilanova considered the control of the manner in which the medicine is best administered and the need to observe the time a medicine takes to act. In addition to refining new details regarding contingent factors — such as the purity, freshness or deterioration of the drug to be tested, and even the substance's or person's geographical origin since it may alter its effect — he gave special emphasis to the discovery, not just of primary qualities like Galen, but what McVaugh designates as properties of higher order (i.e., fortifying, repercussive, thickening, useful to expel humours or to open passages...). He likewise incorporated the requirement of employing a standard measure dose of a substance in the test and established the concept of *prima quantitas* as part of the protocol. This allowed him to assign a given weight or dosage to first, second, third and fourth-degree medicines (three drachms, two drachms, one and half drachms, and one drachm respectively).[20] Arnald of Vilanova defended the complementarity of both systems and left to the physician's decision which method of testing was appropriate according to given circumstances. However, he believed that while the *via rationis* only offered a quick probable result, the *via experimentis* required a larger investment of time and involved some risks for the subject on which the medicine was tested, but it provided a virtually assured certainty.[21]

18. McVaugh, «Determining a Drug's Properties...», pp. 190-191.
19. McVaugh, «Determining a Drug's Properties...», pp. 192 and 198.
20. McVaugh, «Determining a Drug's Properties...», pp. 192-197 and 200-201.
21. McVaugh, «Determining a Drug's Properties...», pp. 196-198.

Few relevant innovations were added later on, but drug testing still remained a topic of debate for some time. Amongst Montpellier's physicians, by 1326, Jordan de Turre refuted some of Vilanova's assertions, particularly the idea of ascribing a common particular dose to all medicines of a given degree. So he proposed a standard measuring system under constant conditions to find out *via experimentis* the right dose for drugs sharing the same degree. The medicine was to be tested on healthy humans selected amongst the most temperate subjects from as temperate a locality in the region as possible and it had to be administered gradually, increasing the quantity and waiting — several days if necessary — to observe its effect. Once the right dose in the first degree is determined, the amount would be applied by approximation to other medicines of the same degree. Alternatively, Jordan de Turre also seems to have added a new little twist to the *via rationis*, namely, trusting extant authoritative inferences already made by scholars such as Ibn Sīnā (so no need in these instances to test anything, not even to perform any reasoning). Eventually, ten or fifteen years later, Gérard de Solo also added a complimentary refinement — this time concerning the control of the test conditions to determine the degree of a compound medicine — to show that he too had dealt with the issue of drug testing.[22] In Italy, contemporary physicians such as Dino del Garbo (d. 1327), Antonio da Parma (d. 1327), and Gentile da Folino (d. 1348) also discussed Ibn Sīnā's protocol, the difficulties that some of its imprecisions posed, and the need to combine the experimental and the rational analogical methods. Yet, without questioning the scientific character of the discipline, they mainly stressed the problem of scientific uncertainty — that is, the limitations both of medical knowledge and of experimentation. Under the influence of Andalusi medical authors such as Ibn Zuhr (d. 1162) and Ibn Rushd (d. 1198), they basically emphasized the key role of practical experience and the physician's individual gift as practitioner.[23]

As a whole, while Ibn Sīnā's method closely resembled modern scientific standards, it is evident that some later medieval western physicians elaborated the protocol even further and gave as serious a thought to finding some secure way of testing drugs as the technology of the time allowed. All the above-mentioned authors and earlier Islamic physicians coincide in appreciating the crucial role not

22. McVaugh, «Determining a Drug's Properties...», pp. 201-206.

23. Chandelier, «Expérience, expérimentation et connaissance dans la médecine scolastique italienne du 14e siècle», pp. 388-401.

only of practical experience, but also of empirical observation. The idea of blending — converging instead of opposing — experimentation and experience to rationally identify the properties of drugs is a common feature advanced by al-Rāzī in the tenth century, for — as Peter Pormann asserted — he «argues that theoretical knowledge of drug faculties alone is not sufficient to know how they work [...] Experience, both first-hand and second-hand is also needed».[24]

2. Testing Treatments and Tested Remedies in Medieval Islam

If we move now from testing the primary qualities of simple drugs to trying cures in general, another question is how did medieval physicians ascertain the effectiveness of a treatment, that is to say, of their medical interventions in everyday practice. Whether we speak of western and Islamic treatments employed on actual patients, new pharmacological formulas or «tested remedies» like those discussed later in this essay, what was the quality of evidence they relied on to consider that a treatment had cured the patient's condition? Was the condition cured or did the symptoms simply disappear? How did they assess clinical evidence? Put in modern biomedical jargon of Evidence-Based Medicine, what was the NNT (Number Needed to Treat) in order to deem a remedy effective?[25] One of the first questions that arises is how did medieval Islamic physicians know that the pa-

24. Pormann, «The Formation of the Arabic Pharmacology...», pp. 508-509.

25. Evidence-Based Medicine (EBM) is a paradigm for medical practice which appeared in 1988 in Canada and began to consolidate in the 1990s. Nevertheless, it is considered that the founder of this movement was Archie Cochrane, who gives name to the Cochrane Library's studies on comparative effectiveness of treatments at present. As opposed to intuition, clinical experience and pathophysiology reasoning, EBM stresses the examination of high quality clinical research for clinical decision-making. It fostered the development of meta-analysis and systematic reviews, consisting of the identification of studies on a given topic, the selection of those which meet scientific parameters (usually, no more than a few out of thousands), and a critical analysis regarding the best available evidence. The NNT is a statistical concept that measures a therapy's effectiveness estimating the number of patients that need to be treated in order to benefit one person. For example, if a drug has an NNT of 5, it means five patients must be treated with the medicament to benefit one individual. As I see it, the higher the number of people needed to treat, the lower the evidence of the treatment's effectiveness. (The Centre for Evidence-Based Medicine: https://www.cebm.net/2014/03/number-needed-to-treat-nnt/, accessed in February 2020).

tient's clinical (real or apparent) improvement responded to the treatment's effect and not to the unknown powers of the mind (faith, placebo, suggestion...) or even to a recovery which would have equally occurred without any medicine, as suggested by Ibn Ḥazm in eleventh-century al-Andalus. This topic raises more questions than answers as far as medieval Islam is concerned, for there is inadequate textual information (actual evidence) to obtain not only an historically valid general conclusion, but even valid conclusions for individual cases. The issue has been addressed by McVaugh for the western medical tradition (early fourteenth-century Montpellier) in another of his usual seminal publications.[26] Although from a very different perspective and only briefly touched upon here, it is interesting to look at what medieval Islamic medical sources may hint at.

As far as is known, in medieval Islamic medicine there is only one attested instance of attempting to assess the effectiveness of a treatment using a control group. Not by chance that instance involves Abū Bakr Muḥammad ibn Zakarīyā' al-Rāzī (d.925), director of two hospitals, a prolific writer and the clinician *par excellence* in medieval Islam. Nevertheless, his idea to administer a given treatment to a group of patients and withholding it to another group does not mean that he performed clinical trials or that he applied any protocol similar to the theoretical rules discussed above for determining the qualitative properties of simple drugs. The experiment — translated by Pormann — is limited to a brief comment following the careful description of how symptoms of brain fever (*sirsām*) developed and the moment when bloodletting must be performed; then al-Rāzī stated to have intentionally given up treating a group of patients «so as to remove the doubt» about the treatment, and to have concluded that bloodletting was an effective therapy.[27] Aside from not specifying how large the sample was (i.e., how many patients were involved), the idea seems to reflect a fleeting curiosity that he never again put into practice, for otherwise, he would have recorded it as he did so many other personal experiences and observations. Likewise, in three instances, al-Rāzī's comment suggests evaluating the treatment's success in statistical terms, although only one of the instances concerns assessing the effectiveness of a new therapy, and it may well respond to a rough quantification, that is, an approximate estimation that anyone

26. Michael McVaugh, «The "Experience-Based Medicine" of the Thirteenth Century», *Early Science and Medicine*, 14 (2009), pp. 105-130.

27. Peter E. Pormann, «Medical Methodology and Hospital Practice: the Case of Fourth/Tenth Century Baghdad», in Peter Adamson (ed.), *In the Age of al-Fārābī. Arabic philosophy in the Fourth/Tenth Century. The Warburg Institute Colloquia*, 12 (2008), pp. 109-110.

could have uttered.[28] However, al-Rāzī's writings attest that he carefully observed his patients and that his extensive clinical experience provided him with obvious conclusions both with regard to pathophysiological processes and treatments's effect. In other words, although his research endeavours and note-taking practices are probably only representative of a few other learned practicing physicians (not of medieval Islamic medical writers as a whole), al-Rāzī certainly attests the importance of personal and empirical observation in medieval Islamic medicine.

Animal testing was not practiced in medieval Islam. Only two instances are known so far to have been recorded, and the experiments reflect anecdotal curiosity. One of them also concerns al-Rāzī and the administration of quicksilver (mercury) to a monkey in his possession — perhaps a pet — in order to assess the veracity of information contained in Greek sources regarding its toxicity, which this time turned out to be correct.[29] The second instance concerns the twelfth-century Andalusi physician Abū Marwān ʿAbd al-Malik b. Zuhr (d. 1162), known in the western medical tradition as Avenzoar. This author was one of the few medieval Islamic physicians who incorporated episodes of his professional experience into his medical treatises. In his well-known and influential treatise *Kitāb al-Taysīr*, written at the end of his life, he explains that during his medical training he detected that earlier medical authors had misunderstood the medical term for windpipe in Galen's works. As a consequence, they thought that Galen had not addressed tracheotomy as a treatment for a usually fatal swelling of the throat named *ḏubḥah* (*squinancia*). So prompted by this mistaken assumption in the earlier medical literature, Ibn Zuhr goes on to state that being a young medical student he cut the skin and made a tiny incision on a goat's windpipe. He

28. Pormann, «Medical Methodology and Hospital Practice», pp. 104-106 and 108. When discussing the treatment for dropsy, he mentions to have tried new therapies when the usual ones (purging and warm drugs) did not work. He observed that a third of the patients were cured while two thirds were affected by a milder form of dropsy. In a passage warning against the reliability of information advocated in medical literature to highlight the value of qualified experience, he mentioned that in 800 instances out of 2000 the course of the disease developed in the contrary fashion. In another utterance concerning the same issue, he alludes to having recorded the name of those patients whose state developed according to Galen's books and the names of those — many more — who did not. Yet in the first instance, the statement may well be an approximate and subjective estimation; in the second one, numbers may not necessarily respond to real exact data either; and the third one, the number of patients must have been small and he speaks of a mere list of names.

29. Pormann, «Medical Methodology and Hospital Practice», p. 111.

ended this short story explaining how he treated the goat's little wound until it healed, stating that the animal lived for many years afterwards, and more interestingly, asserting that he had not dealt with the surgical procedure earlier elsewhere in his work because nobody of his time or previously had ever conducted a tracheotomy.[30]

Knowledge about drug effects and the effectiveness of remedies was gained empirically, and some medieval Islamic physicians recorded the procedures and remedies they had found useful. These remedies were often designated as *mujarrab*, tested in the sense of confirmed by experience. However, beyond using expressions such as «several times», it is rarely mentioned in how many patients they actually employed it. In the medical recipe book by the fourteenth-century Andalusi physician known as al-Shaqūrī, which is analysed below, a remedy is introduced with the statement «amongst the notable electuaries we have experienced *in two patients*» for such and such condition (*wa-min al-maʿājin al-fāḍilah fī ḏālik ma jarrabnā-hu fī marīḍayn*...).[31]

Moreover, with regard to the number of patients needed to be treated in order to deem a remedy effective, a large number of remedies in other medical recipe books analysed in the last part of this essay suggest that it was often sufficient that it worked once. In al-Sūsī's *al-Tajārib al-ṭibbīyah*, by context the word *tajribah* (the equivalent of *mujarrabah* in other texts) seems to refer to «tested remedy» or «remedy proved effective», but it may also be translated as experience or experiment — that is, as if attempting a cure with a mixture of substances intuitively, tentatively or randomly chosen to prepare a remedy whose effect is later evaluated.[32] As a matter of fact, a recurrent expression in al-Sūsī's text is «*tajribah* (or in plural, *tajārib*) *waqaʿat fī*», which can be translated generically as

30. Rosa Kuhne, Cristina Álvarez Millán, and Expiración García Sánchez, «Ibn Zuhr, Abū Marwān», *Biblioteca de al-Andalus*, vol. 6, p. 357. Abū Marwān ʿAbd al-Malik b. Zuhr, *Kitāb al-Taysīr fī mudāwāt wa-l-tadbīr*, ed. Mīshīl Khūrī. Dimashq: Dār al-Fikr, 1983, pp. 149-150.

31. Al-Shaqūrī, *Maqālah fī ṭibb aw mujarrabāt*, ed. Muḥammad al-ʿArabī al-Khaṭṭābī, *Al-Aghdhiya wa-l-adwiya ʿinda muʿallifī al-gharb al-Islāmī* (Pharmacopée et régimes alimentaires dans oeuvres des auteurs hispano-musulmans. Textes choisis et commentées). Beirut: Dār al-Gharb al-Islāmī, 1990, p. 430.

32. The same applies to al-Rāzī in his discussion of the treatment for dropsy mentioned in a footnote above. When seeing that the usual ones (purging and warm drugs) did not work, he tried new therapies as enemas to heat the region of the kidneys, to make the patients sit in warm sand up to their chests, and to make them attend constantly dry baths as a means to obtain the intended balancing humoral therapy. Pormann, «Medical Methodology and Hospital Practice», pp. 104-106.

«experience concerning (such or such condition)», but which more literally means «experience that occurred». Moreover, entry 57 reads *ṣifat tajribah waqaʿat ʿindī fa-ṣaḥḥat mirāran*, which can be rendered as «recipe of an experience that occurred to me and I found correct sometimes», or alternatively, «of an experiment I carried out [whose effectiveness] I verified or confirmed several times». It is difficult to assess the extent to which it may imply a random — and deliberate — experimental testing with whatever ingredient came to mind or was at hand, but I would say this is what it looks like.

Although in different proportions in each work, the Andalusi recipe books discussed below contain the author's remedies devised and assessed by personal observation, as well as employed in their everyday practice. However, these works also contain recipes collected from other sources. Either on account of the remedy's wording and/or nature, or on account of being explicitly stated, many treatments considered of therapeutic value are linked to written as well as oral transmission. One cannot avoid the impression that a good number of them are the therapy employed in particular cases which — according to their seemingly effectiveness just a few times or once — consequently became classified as a treatment proved by experience (*mujarrabah, tajribah*), thus, being recorded as a tested remedy useful for anyone else presenting the same condition. As a matter of fact, Abū l-ʿAlāʾ Zuhr's collection of prescriptions and treatments devised for given patients (compiled after his death in 1130) also contains remedies presented as «recipe useful for» and «another [useful] remedy for the same condition», as if taking for granted that once it had helped one patient, it would help others as well — again — therefore becoming worthy of being recorded to expand the arsenal of possible therapies for a certain condition. Moreover, Abū l-ʿAlāʾ Zuhr's *Kitāb al-Mujarrabāt* appears to include a sort of equivalent to the model of «magic bullets» at present (a metaphor for the specificity and effectiveness of few medicaments such as penicillin and insulin). In this regard, Abū l-ʿAlāʾ Zuhr provides the formula for an ointment useful for nerve stiffness and gout that takes its name from the vizier and dictator al-Manṣūr Ibn Abī ʿĀmir (g.978-1002). The author states that he tried it and found it excellent. So far so good, but two considerations come out of this tested remedy. On the one hand, in the absence of information — as in other entries — reporting or implying that he could have prescribed it to his patients by routine, the way in which the assertion is expressed suggests that he only tried it once and that was sufficient to consider it an effective therapy for gout. On the other, throughout the century that elapsed between Ibn Abī ʿĀmir and Abū l-ʿAlāʾ Zuhr, al-Manṣūr's ointment — a compound remedy devised for a particular

individual — had become a standardized pharmacological medicament for a given condition.[33]

In medieval Islamic actual medical practice, learned physicians appear more inclined towards effective universal therapies and empirical treatments — even if they don't know how or why they work — rather than very rational, technical treatments backed up by learned text-based theory whose actual efficacy is not completely assessed or sure.[34] Moreover, this is a trend that seems to persist in early modern Europe.[35] The gap between therapy described in theoretical medical texts and actual prescribed treatments remains to be assessed in the medieval West, but it applies at least to Arnald of Villanova's *experimenta*, a collection of day-to-day practice written in the period 1305-1311. In consonance with the comparison of al-Rāzī's *K. al-Tajārib* and treatments advocated in his theoretical works, McVaugh already noticed in 1971 that the seventy-three accounts of successful treatments that Arnald of Villanova found worthy of compilation reflect the use of a limited range of medicines and the prescriptions «bear little resemblance to those that Arnald recommends for similar conditions in his more formal works».[36]

As a whole, one cannot avoid the impression that therapy, both in medical recipe books and prescriptions for given patients, responds to random clinical decision-making rather than to thoughtful implementation according to medical theory. In any event, with regard to NNT (number needed to treat) and the clinical evidence medieval Islamic physicians relied on to evaluate the effectiveness of

33. Abū l-'Alā' Zuhr, *Kitāb al-Muŷarrabāt (Libro de las experiencias médicas)*. Edición, traducción y estudio by Cristina Álvarez Millán. Madrid: CSIC, AECI, 1994, p. 184 (transl.) and 115 (Arabic text).

34. Cristina Álvarez Millán, «Was Therapy Personalized in Medieval Islamic Medicine? Standardization versus Individualization in the Collective Imaginary», to be included in the *Festschrift in Honor of Emilie Savage-Smith* edited by Ignacio Sánchez and Yossef Rapoport (forthcoming).

35. Michael Stolberg, «Empiricism in Sixteenth-Century Medical Practice: The Notebooks of Georg Handsch», *Early Science and Medicine*, 18.6 (2013), pp. 487-516. It should be noted that the greater part of the features concerning medical practice by Georg Handsch and colleagues (such as the value of sensory experience and personal observation, the empiricist attitude, distrust in bookish knowledge and the extent to which stories of individual cases were recognised as a valuable source for practical knowledge) are already attested in medieval Islamic medicine, even if documented by a small number of learned physicians.

36. See Michael McVaugh, «The *Experimenta* of Arnald of Villanova» *Journal of Medieval and Renaissance Studies* 1 (1971), pp. 109-110.

treatments, sources suggest that it was enough that a remedy seemed useful a few times or only one in order to deem it effective as a universal therapy valid for all. Such small samples of the trials perhaps did not leave much room for malleability of research results as nowadays.[37] Nevertheless, parallel to the considerations which opened this essay regarding twenty-first century medicine, once more one cannot avoid the impression that methods employed by medieval Islamic physicians to test new treatments were not in practice nearly as good as they are often made out to be, that medieval Islamic therapeutic interventions in many instances were barely effective — if at all, and that a treatment's effectiveness was rather overestimated just as often today.

In other words, from our modern scientific perspective, Ibn Ḥazm's observation of the fact that the utility of medieval scientific therapeutics was the same as not having any treatment at all may seem correct after all. Or perhaps not, for the same kind of tested remedy (or the same praxis of testing a new remedy on very few subjects) can be found in modern scientific biomedical research. Not so long ago (December 2018), one of the best positioned biomedical journals in the impact factor ranking of its medical specialty published a brief study on the intratympanic administration of a strong corticoid in a way to foster a longer exposure with inner tissues: it was tested on only three people, two of them 81 years old. The trial's conclusion omitted the typical comment in all articles dealing with new treatments, which emphasizes that the therapy is «safe and effective», usually only to state immediately afterwards that more research is needed. Nevertheless, in spite of the sample's extremely small number and in spite of the fact that the third research subject (a 62 year old woman) showed no improvement with the treatment, the authors state «It is noteworthy that all 3 patients had a significant hearing loss, and 2 of the 3 had an excellent outcome».[38] So are twenty-first century biomedical research methods really more scientific than medieval Islamic medical experiences and tested remedies discussed above? Or should we consider this clinical study a medieval Islamic *mujarrabah*?[39]

37. Stegenga, *Medical Nihilism*, pp. 16-17 and 84-98.

38. Larry Lundy, Selmin Karatayli Ozgursoy, Samantha Kleindienst, «Intratympanic Dexamethasone via Saturated Gelfoam for Idiopathic Sudden Sensorineural Hearing Loss», *Otolaryngology–Head and Neck Surgery*, 160.2 (2019), pp. 361-363 (article first published online December 4, 2018; DOI: 10.1177/0194599818816306).

39. This biomedical article is not an isolated or anecdotal instance. For a study conducted on just one research subject, see Archana M. Sangha, «Treatment of post-menopausal acne with treti-

Aside from al-Rāzī's experiment of quicksilver toxicity on a monkey, it is unknown whether medieval Islamic physicians gave much thought to a treatment's safety and the retarded or long-term's side effects of drugs they tested or employed, although it is likely that they limited themselves to observe only its immediate effects like nowadays. Yet as can be seen in present biomedical publications, the majority of trials last only a handful of weeks, and as Stegenga accurately puts it, «trials are usually long enough to detect possible benefits of a drug but too short to detect many harms».[40] In the light of medieval Islamic texts concerning hands-on therapeutics, it seems that then, as now, the procedure for testing treatments and finding new cures was rather short. Moreover, medieval Islamic physicians did not have anything similar to modern measuring or statistical instruments to design, evaluate and interpret medical evidence and it seems that, unless the patient died, they believed in the effectiveness of their therapeutic interventions. No matter how fashionable Evidence-Based Medicine is at present, few clinicians question the scientific limitations in the evidence of new treatments, and the majority of them take for granted that they are safe and effective. However, at least in Medieval Islam there were learned physicians such as al-Rāzī in the East and Ibn Zuhr in the West questioning medical literature, advocating qualified experience (balancing the referral to written knowledge and one's own experience), and (far from current medical dogmatism) also raising awareness that complete certainty cannot be attained in therapy.[41]

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noin lotion 0.05% delivers rapid results and concomitant benefits», *SAGE Open Medical Case Reports*, First Published June 7, 2020; DOI: 10.1177/2050313X20929798. Judging by the title of articles published, for example in the *Journal of International Medical Research*, a number of biomedical studies experimenting with new cures seem to respond to fancy — as much as useless — ideas applied with the sole aim of publishing, as well as attesting the frantic production of Chinese biomedical research in this particular case. Incidentally, not all biomedical research consists of registered, large sample or — often — multi-centre clinical trials. The mention of formulaic statements regarding the fulfilment of ethical and legal norms must be questioned, for in many instances studies seem to be conducted without the patient's knowledge and/or true consent. On the industry (and business) of biomedical research, its institutionalization and mechanization in the last decades as narrated by a health care professional, see Seamus O'Mahony, *Can Medicine be Cured? The corruption of a Profession*. London: Head of Zeus Ltd, 2019.

40. Stegenga, *Medical Nihilism*, p. 172.

41. On al-Rāzī's warning against the dangers of unqualified experience, see Pormann, «Medical Methodology and Hospital Practice», pp. 99-103.

Last but not least, one of the few certainties historians of Islamic medicine have is that a learned physician, the Christian Melkite Qusṭā b. Lūqā (ca. 830-910), recognised the placebo effect as early as the ninth century in one of his numerous works, *Physical Ligatures*, extant only in Latin translation.[42] This work was also known as *On Incantations, Adjurations, and Suspensions around the Neck*, but more than a treatise on magic, it is the proof that, in the Middle Ages, magic was as learned an activity as medicine, not a marginal one. Judith Wilcox and John Riddle described it as a learned «high medicine» text on the empirical use of magic that was widely read in the medieval West. Although it remains to be investigated whether this work was echoed in later Islamic medical literature, there is evidence, as shown by McVaugh's study, that western medieval physicians also recognized the placebo effect in their practice, even if associated with incantations and amulets.[43] It must be stressed that the history of the idea goes back to Greek antiquity (more particularly to Plato) and is also linked to the hidden properties of things described in books on *khawāṣṣ* to be discussed below. In any event, neither the Greek precedent nor the topic addressed in Qusṭā b. Lūqā's work undermines the clarity with which Qusṭā b. Lūqā recognised that mere belief in the efficacy of a remedy will help in a cure, even if his explanation of the phenomenon — the strengthening of the mind by the belief — may not seem scientific enough to a modern audience.[44]

3. First-hand medical experience, hands-on therapeutics and their medical-literary genres

A major legacy of medieval Islamic medical literature is the systematization of dispersed and fragmentary Greco-Roman medical knowledge into comprehensive formats. The effort applied to synthesis, blending, elaboration and expan-

42. Born near present Syria, he worked first in Baghdad and then in Armenia. He is attributed a number of translations of Greek scientific works and the authorship of 90 works of his own. Judith Wilcox and John M. Riddle, «Qusṭā b. Lūqā's *Physical Ligatures* and the Recognition of the Placebo Effect», *Medieval Encounters*, 1.1 (1995), pp. 1-25

43. McVaugh, «The "Experience-Based Medicine" of the Thirteenth Century», p. 123-124.

44. Wilcox and Riddle, «Qusṭā b. Lūqā's *Physical Ligatures*», pp. 1-3. For an updated view of the effect of induced expectancies or suggestion which condition therapeutic outcomes and ways to capitalize on the placebo effect in clinical practice, see Luana Colloca, Arthur J. Barsky, «Placebo and Nocebo Effects», *New England Journal of Medicine*, 382.6 (2020), pp. 554-561.

sion of earlier medical literature resulted in learned medical masterpieces of their own, either as general manuals, works of encyclopaedic nature, or monographs on given topics. As is well known, pharmacology greatly expanded with the incorporation of a large number of new drugs from all around the Islamic lands, drugs that had been unknown to their Greco-Roman predecessors. Medical writings on pharmacology resulted in a variety of genres, such as learned therapy handbooks, pharmacological texts on simple and compound drugs (also included in larger medical theoretical works), books on foodstuffs and dietetics, lists of substitutes and synonyms, botanical treatises, and formularies or dispensatories. As a necessary complement to theoretical therapy, other medical-literary genres arose as a result of first-hand experience and hands-on therapeutics, two basic concepts which substantiate the practical nature and *raison d'être* of these writings. Although this essay's intention is to address one of them in particular — that of medical recipe books — this section aims at providing a general overview of several typologies and, mainly, identifying Islamic and medieval western sources in an attempt to clarify the different medical-literary genres. This recapitulation offers a necessary background in which to frame some of the scholarly work published over the last decades, but it also aims at encouraging the examination of particular historical sources within a broader context for a better understanding of the material under scrutiny. If medieval Islamic medicine cannot be fully understood without the reference of Greco-Roman medicine, then for similar reasons, studying it hand in hand with the medieval western medical tradition is a useful and necessary way to improve our understanding of it.

3.1. Case histories and prescriptions

In the Middle Ages, scientific knowledge was based on the principle of authority and, as suggested by Oliver Kahl, medieval Islamic thought was characterized by fixation, accumulation, and perpetuation of the textual tradition.[45] Therefore, regardless of each author's contribution in terms of better organization of

45. Oliver Kahl, «The Text and its Philological Character», in F. Jamil Ragep, Faith Wallis, Pamela Miller and Adam Gacek (eds.), *The Herbal of al-Ghāfiqī. A Facsimile Edition of Ms 7508 in the Osler Library of the History of Medicine, McGill University, with Critical Essays*. Montreal & Kingston, London, Ithaca: McGill-Queen's University Press, 2014, p. 44.

medical theory, larger or lesser exhaustiveness in the exposition, the amount of earlier sources employed in its composition, innovative formats, etc., to a large extent works on medical theory basically encompassed a rather stable literary tradition. Moreover, even if medieval Islamic medical authors expressed their disagreement with Galen — quoting Nancy Siraisi's accurate view — «few learned medieval practitioners showed any signs of readiness to modify theory in the light of experience».[46] However, some of them did record their medical experience, personal observations, prescriptions and remedies which had proved to be effective. They did so for different reasons and in different venues.

With regard to clinical accounts, a few included episodes of their clinical experience in their theoretical works, sometimes to illustrate a given issue or to offer guidance in similar cases, at other times recalling biographical issues concerning their own ailments, and often emulating Galen's use of the case history for self-advertisement.[47] Also, several collections of case histories have been preserved. Although al-Rāzī is an exception in his time-period for the vast amount and variety of personal observations as well as clinical texts recorded by a medieval Islamic physician which are extant, he clearly illustrates the different purposes of clinical accounts in medieval Islamic medicine.[48] Inspired by the methodical clinical records in the works of the *Hippocratic Corpus* known as *Epidemics*, al-Rāzī gathered thirty-three case histories of his own, presenting them for self-instruction, devoid of literary elaboration. This group of case histories is found in his *Kitāb al-Hāwī* (the Comprehensive Book on Medicine), a large private commonplace book that contains passages extracted from Greco-Roman, Indian, Syriac and earlier Islamic sources, along with a number of personal observations and experiences. This compilation of source materials was conceived for

46. Nancy G. Siraisi, *Medieval and Early Renaissance Medicine. An introduction to Knowledge and Practice*. Chicago and London: The University of Chicago Press, 1990, p. 137.

47. For an analysis of the varying categories of case histories preserved in medieval Islamic medical literature and the various purposes of clinical accounts according to their literary and social contexts, see Cristina Álvarez Millán, «The Clinical Account in Medieval Islamic Medical Literature: *Tajārib* and *Mujarrabāt* as Source», *Medical History*, 54.2 (2010), 195-214

48. For an all-encompassing and comprehensive analysis of the different types of clinical records by al-Rāzī in the context of — and in comparison with — the Greco-Roman precedents (*Epidemics*, Rufus of Ephesos and Galen), see Cristina Álvarez Millán, «Graeco-Roman Case Histories and Their Influence on Medieval Islamic Clinical Accounts», *Social History of Medicine*, 12.1 (1999), 19-43.

his personal use and it was published only after his death. Al-Rāzī also included another group of case histories in the third chapter of his short treatise *Sirr ṣināʿat al-ṭibb* (The Secret of the Medical Art). Although this group of clinical records also provides general abstractions from his actual practice useful for similar cases, in this instance the narrative rather follows Galen's rhetoric style, for amongst other similar elements, the focus is on al-Rāzī's personal and professional image as well as on cases concerning princes, rulers or members of high society. A third type of case history is the collection of nearly nine hundred clinical records linked to his medical hospital practice in Baghdad and his native city of Rayy (near present Teheran).

Assessing the documentary value of sources

Medieval Islamic medicine has traditionally been approached through theoretical medical treatises, on the assumption that learned medical texts reflect actual medical practice in medieval Islam. However, case histories of all types and passages recalling episodes of the physician's personal experience are a more relevant window to study actual medical practice in medieval Islam, and they are the closest we can get to it. Stating that research based on that type of material is not without risks, drawing attention to the many purposes they may serve, and calling for assessment of its documentary value does not negate the fact that al-Rāzī's *Kitāb al-Tajārib* can serve as a source for studying actual medical practice. The comparative analysis of al-Rāzī's *Casebook* with some of his most influential theoretical works has allowed one to measure the gap between medical doctrine and everyday practice, illustrating that the medical knowledge and the therapeutic advice so meticulously described in medieval Islamic theoretical treatises was generally neglected in practice. In other words, the theoretical principles contained in learned medical works were not actually carried out in practice.[49] General cautionary assertions regarding the need to analyse the presence of literary conventions or the historical and scientific context as a means to determine the author's agenda or the purpose of recording clinical informa-

49. See Cristina Álvarez Millán, «Practice *versus* Theory: Tenth-Century Case Histories from the Islamic Middle East», in P. Horden and E. Savage-Smith (eds.), *The Year 1000: Medical Practice at the End of the First Millennium*. Special issue of *Social History of Medicine*, 13.2 (2000), 293-306.

tion (and for that matter, also drawing attention towards the irreconcilable breach between the conceptualization of disease in premodern societies and those at present in terms of retrospective diagnosis) does not undermine the importance of this kind of source.[50] Indeed, if properly studied, all types of case histories, as well as medical prescriptions and medical recipe books, are essential for a better understanding of medicine in medieval Islam. The material from the Cairo Genizah undoubtedly is another most valuable source for this purpose. According to Leigh Chipman and Efraim Lev, however, prescriptions for patients do not indicate the condition for which they were prepared.[51] Therefore, this source only allows us to study pharmacology as practiced in medieval Cairo. In contrast, case histories by al-Rāzī and the Andalusi physician Aḥmad b. ʿĪsā al-Hāshimī (d. 1077) — or clinical accounts included in theoretical works as well as Abū l-ʿAlāʾ Zuhr's prescriptions — are useful for studying disease and related social, and professional issues, in a wider geographical area. Likewise, connecting the gap between theory and practice with some of the conclusions regarding standardization *versus* individualization of medical care in medieval Islam (both arising from the analysis of medical recipe books in this essay and from a previous article where this issue was addressed),[52] it is possible to discern additional reasons why the prescriptions of the Cairo Genizah are not identical to the pharmacological formulas described in dispensatories.[53]

50. On the issue of retrospective diagnosis see, Cristina Álvarez Millán, «Disease in Tenth-Century Iran and Irak according to al-Rāzī's Casebook», *Suhayl. Journal for the History of the Exact and Natural Sciences in Islamic Civilization*, 14 (2015), 49-88.

51. Leigh Chipman, «How to Read a Medical Prescription», *Jewish History*, 32 (2019), pp. 487-492, with correction, pp. 493-496; L. Chipman and Efraim Lev, «Arabic prescriptions from the Cairo Genizah», *Asian Medicine* 6 (2010-11), pp. 75-94; L. Chipman, «The Jewish Presence in Arabic Writings on Medicine and Pharmacology During the Medieval Period», *Religion Compass*, 7.9 (2013), pp. 394-401; E. Lev, «Mediators between Theoretical and Practical Medieval Knowledge: Medical Notebooks from the Cairo Genizah and their Significance», *Medical History*, 57.4 (2013), pp. 487-515.

52. Álvarez Millán, «Was Therapy Personalized in Medieval Islamic Medicine? (forthcoming).

53. Chipman, «The Jewish Presence in Arabic Writings on Medicine and Pharmacology During the Medieval Period», p. 399; Chipman, «How to Read a Medical Prescription,», p. 489; Chipman and Lev, «Arabic prescriptions from the Cairo Genizah», p. 92.

Assessing the contents of literature on *Tajārib* and *Mujarrabāt*

The presence of the term *tajārib, mujarrabāt* or *mujarrab* in the title of a manuscript is not a reliable guide to the actual contents.[54] It is necessary to examine each work to tell what type of material it actually contains. To illustrate the problem more graphically, while al-Rāzī's *Kitāb al-Tajārib* is a collection of clinical records arising from hospital practice, the Andalusi collection of case histories linked to Aḥmad b. ʿĪsā al-Hāshimī's medical training was entitled *Kitāb al-Majālis fī l-ṭibb* (Sessions on medicine).[55] In turn, Ibn Muḥammad al-Sūsī's *al-Tajārib al-ṭibbīyah* is an Andalusi tenth-century medical recipe book containing tested remedies for different conditions. Furthermore, Abū l-ʿAlāʾ Zuhr's collection — mainly containing prescriptions for real patients — was known as *Kitāb al-Mujarrabāt*, but another medical recipe book — like al-Sūsī's work, also containing tested remedies — was preserved under the title *Maqālah fī ṭibb aw mujarrabāt al-Shaqūrī*. Moreover, the collection of tested remedies from eleventh-century al-Andalus by Ibn Wāfid carries the literary and metaphoric title *Kitāb al-Wisād* (The Pillow Book). And last but not least, we should not forget that another medical-literary genre, the books on *khawāṣṣ* dealing with useful properties of animal parts, can also be entitled *Mujarrabāt al-Khawāṣṣ* and *al-Khawāṣṣ al-mujarrabah*, as will be seen below. Conversely, titles carrying the word *mujarrab* (tested), do not necessarily always imply magical procedures of sympathetic therapy, as they may also contain learned medical knowledge.

Consequently, it is not necessary to study additional manuscripts in order to determine whether the Arabic words *tajārib* and *mujarrabāt* were applied as synonyms in the East and the West or were used to designate particular typologies of first-hand medical experience and hands-on therapeutics literature, for it is clear that medieval Islamic physicians were not interested in establishing distinct medical-literary genres at the time. Moreover, for most of the works under discussion, the title was not given by the author, but by a later compiler or disciple who placed it in circulation. Thus, unless the work was intentionally written for publication and given a literary title by the physician who composed it, different types of materials were assigned a sort of generic title.

54. Abū l-ʿAlāʾ Zuhr, *Kitāb al-Muŷarrabāt*, pp. 31, 32 and 49; Álvarez Millán, «The Clinical Account in Medieval Islamic Medical Literature: *Tajārib* and *Mujarrabāt* as Source», p. 200.

55. Aḥmad b. ʿĪsā al-Hāšimī, *Kitāb al-Maŷālis fī l-ṭibb*, ed. by S. Kaddouri. Madrid: CSIC, 2005.

Framing the medical-literary genre of the clinical record

Medieval extant sources discussed in this section often include a mixture of varying materials which have made its classification in a particular genre difficult. Nevertheless, the issue of the Arabic title given to works on first-hand medical experience and hands-on therapeutics has fostered confusion about different text typologies within medieval Islamic medical literature, and it has also prevented the identification of parallel medical-literary genres in the western medical tradition. Since *tajārib* and *mujarrabāt* do not designate distinct types of contents, it might be more fruitful to use another terminology so that we all speak the same language. For instance, on account of the similarity with Arnald of Vilanova's work concerning his clinical experience, it would be possible to designate al-Rāzī's *K. al-Tajārib* and Abū l-ʿAlāʾ Zuhr's *K. al-Mujarrabāt* as *experimenta* or *empirical cures* according to the principles of Galenic medicine (as opposed to *mirabilia*, *miracula* or treatments of magical character in general). Conversely, it would be more precise to consider some of Arnald of Vilanova's *experimenta* as case histories.

As research by Lea T. Olsan, Chiara Crisciani, and Jole Agrimi attests, the term *experimenta* may refer to «proven» or «tested» remedies which fall within the realm of hidden properties, and of magical or miraculous procedures.[56] Likewise, Michael Stolberg has shown the different meanings given to words such as *observatio* and *historiae* by just one physician, a fact attested in the sixteenth-century which undoubtedly applies to earlier time-periods and to other terms employed for texts involving first-hand clinical experience.[57] Therefore, given the slippery nature

56. Lea T. Olsan, «Charms and Prayers in Medieval Theory and Practice», *Social History of Medicine*, 16.3 (2003), pp. 343-366; Jole Agrimi and Chiara Crisciani, «Per una ricerca su *experimentum-experimenta*: Riflesione epistemologica e tradizione medica (secoli xiii-xv)», in Pietro Janni and Innocenzo Mazzini (eds.), *Presenza del lessico greco e latino nelle lingue contemporanee: ciclo di lezioni tenute all'Università di Macerata nell'a.a. 1987-8*. Macerata: Facolta di Lettere e Filosofia, 1990, pp. 9-49.

57. The range of meanings for *observatio* in Georg Handsch's writings covers from a case history recorded in detail, short clinical accounts, and instances in which a given diagnostic phenomenon or therapeutic effect was witnessed, up to the observance of certain precepts or rules, and collections of case histories developed out of personal note-taking practices. Stolberg describes terms such as *experientia* (well established knowledge derived from repeated observation), *experimentum* (meaning the same, but usually referred to a specific remedy or secret proven to be effective), *proba* (test or trial to ascertain the nature of certain substances), *visitatio* or *exempla*. However, the term *historiae* was predominantly employed by Handsch for stories of patients he had heard from others or found

of lexical options in the past, it would be wiser to employ a modern terminology: texts addressed in this section today fall in the realm of the clinical record, at the very least, understood in its basic concept of individual document generated by a given physician's medical assistance to a patient.[58] Since Antiquity, these writings may present different kinds of narrative and/or information according to the state of medical knowledge, the physician's purpose or the venue in which the record arose (hospital, home visit, consultation by letter, students' notes...), but they all have a common key feature: a particular patient is involved.

The contents in these writings may describe the progression of the disease, exclusively the symptoms and treatment prescribed, a more or less detailed account of the course of a medical consultation, only the treatment and the physician's commentary, etc. Likewise, the contents can be more or less literary and may simply be fragmentary snapshots of the complete medical assistance a particular individual received throughout a whole life. Nevertheless, these documents respond to the concept of a clinical chart or health record since they are medical information concerning a given patient. From another perspective, the difference between a case history (a clinical account, clinical record, medical experiences, *experimenta*, *consilia*, *historiae, observatione*...) and mere prescriptions or tested remedies proved effective is that in the latter the patient is missing. The main feature that characterizes case histories (any text belonging to the clinical record's genre) is the description of the patient's symptoms or ailment, and the patient's identification either by name, or simply basic data concerning sex, age, com-

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described somewhere, but also to refer to the patients' own oral narration or to extraordinary cases. Stolberg, «Empiricism in Sixteenth-Century Medical Practice», pp. 501-510. See also the discussion of the term *historia* and John Zacharias Aktouarios' ways to introduce his case histories in Petros Bouras-Vallianatos, *Innovation in Byzantine Medicine. The Writings of John Zacharias Aktouarios (c.1275-c. 1330)*. Oxford: Oxford University Press, 2020, p. 78.

58. Although the basic concept of the clinical record is the individual document each physician produces for every individual patient, at present clinical record refers to all the information emited by the patient's medical assistance throughout his life (NHS's primary care data-base, filed records in individual medical specialties, diagnostic tests, reports concerning hospital treatments or attention received at emergencies, etc.). In spite of modern computer and communication technology — including the electronic health record (eHR) — a given patient's clinical record is still subject to fragmentary pieces of information. These pieces remain individually scattered in different hospitals, clinics or physicians' private offices, dispersed both in the private health insurance sector and the public national health services. Even if many of these individual documents are never shared or assembled together, nevertheless, they are clinical records.

plexion, profession, etc. Moreover, a usual feature in case histories and medical prescriptions for particular patients is the presence of simultaneous therapeutic procedures such as a pharmacological therapy combined with a purgative, or bloodletting, cupping, cautery and dietetic advice.

Al-Rāzī's *Kitāb al-Tajārib* mainly contains short medical reports, sometimes reflecting the physician's interrogation of the patient, the patient's objections to the treatment, or the conversation between al-Rāzī and his students. Aside from consultations by letter or on behalf of the actual patient, occasionally, the text reports information about the physical examination of the patient and details about body fluids or the condition's progression. Nevertheless, amongst the nearly nine hundred entries in al-Rāzī's *Casebook*, the most common type is a basic identification of the patient's sex and age, followed by the enumeration of symptoms and the treatment prescribed. Although the word «hospital» (*bimaristān*) does not appear in the work, this material seems linked to medical practice in a hospital setting, and for the most part, the information responds to some kind of systematic procedure in recording every consultation, perhaps transcribed by al-Rāzī's students for future reference and study, collected after his death.

The twelfth-century Andalusi physician Abū l-ʿAlāʾ Zuhr is said to have annotated his medical experiences and prescriptions in the margins of a copy of Ibn Sīnā's *Qānūn*, a work that he openly despised. They were considered worthy of compilation and were gathered together after his death. It is worth noting that the word *mujarrab* never occurs in this collection and that, in terms of medical practice, Abū l-ʿAlāʾ Zuhr's *mujarrabāt* go far beyond haphazard statements such as «I have tried this and found it useful» or «recipe useful for», to be found in medical recipe books, formularies and other medical texts. *Kitāb al-Mujarrabāt* is mainly a collection of treatments prescribed for particular patients. Certainly, it also contains comments on the usefulness of a given drug, critical assessments of some of Galen's remedies, discussions on physiology and pathology of certain organs, and tested remedies, some of them either describing the invention of a new medicament or modifying formulas already known in order to improve their effect. In short, the material concerns both his medical and clinical experience. However, since 66% are prescriptions for particular patients and 11% of it are case histories, it falls in the realm of the clinical record.[59]

59. Abū l-ʿAlāʾ Zuhr, *Kitāb al-Muŷarrabāt*, p. 40.

As for Arnald of Vilanova's *experimenta*, it is a collection of seventy-three accounts concerning his medical practice. The material — dedicated to the Pope Clement V — was gathered at a time when the author was trying to regain the favour of royal and papal courts. According to the selection of entries published by McVaugh, many of them contain treatments that the author found to be successful in particular ailments, that is, tested remedies. However, some entries are short accounts without any literary elaboration concerning given patients and describing the case, the symptoms or cause of the consultation followed by the treatment administered, the patient's recovery, and the physician's conclusion regarding the therapy's universal effectiveness.[60]

Half way between a prescription and a regimen of health is the medical-literary genre concerning *consilia*.[61] This typology has not yet been addressed in the context of medieval Islamic medicine, but some examples are extant and are the subject of another study elsewhere by the present author.[62] The *consilium* can be described as medical advice by letter for a particular patient, although sometimes — particularly, in the western medical tradition — it often developed into a theoretical treatise on a given condition prompted by someone's particular consultation, with a broad margin for the author to show off. The main feature is that the prescription does not restrict itself to the immediacy of a given pharmacological treatment and related instructions such as dietetic advice. Rather, it details advice exhaustively, with regard to, for instance, what should be done according to the season or according to the potential development of the condition in the short and the long run, or alternatively, what kind of simple drugs and foodstuff the patient must take or avoid. Each piece of information might appear sparkled with some kind of rough theoretical explanation, comments regarding how a given foodstuff must be administered, the physician's personal comment regarding in

60. McVaugh, «The *Experimenta* of Arnald of Villanova», pp. 108 and 112-118.

61. On this medical-literary genre, see the pioneering work by Jole Agrimi and Chiara Crisciani, *Les Consilia médicaux*. Turnhout: Brepols, 1994; see also Marilyn Nicoud, «Troubles dans le genre. Les voies multiples de la tradition manuscrite des *consilia* médicaux», in L. Moulinier-Brogi, M. Nicoud (eds.), *Écritures médicales. Discours et genres de la tradition antique à l'époque moderne*. Lyon, Avignon: CIHAM Éditions, 2019, pp. 101-131; E. W. Mellyn, «Consilia», en T. Glick, S. J. Livesey, and F. Wallis, *Medieval Science, Technology, and Medicine. An Encyclopedia*. New York, London: Routledge, 2005, pp. 143-145.

62. For an example in al-Rāzī's *Kitāb al-Tajārib*, see Álvarez Millán, «Was Therapy Personalized in Medieval Islamic Medicine?» (forthcoming).

what season of the year things such as honey or garlic are not appropriate, etc. While the medieval Islamic *consilium* is for a particular patient suffering from a given ailment, the rules and instructions are not tailored according to the patient's personal needs based on a given humoral imbalance or complexion, but according to what is considered beneficial for the particular disease in general. More plainly put, according to a standardized therapeutic intervention. However, when adhering to its original format of prescription for a given condition, in my view, this kind of writing is also linked to the clinical record (and can be considered a variant of the case history) from the very moment one particular patient is involved.

As a medical-literary genre, the case history has adopted multiple forms throughout history. Nevertheless, whether we call it «case history», «health record», «clinical account», «clinical narrative», «nosographical account», *experimenta*, *consilium*, or *observatione* (to quote the most familiar options), they all form part of the history of what today we label as «clinical record». Perhaps the best way to disentangle this issue is with a definition of the case history's *ethos* by a twenty-first century health care professional. According to Martínez Hernández, from the deontological perspective, the clinical record undoubtedly is the *princeps* element in the physician-patient relationship and the fundamental element in the clinical record is the person or patient. The clinical record is an instrumental tool in clinical practice, for it allows one to follow and/or interpret the development of the condition, to make a diagnosis, and to determine the therapy. Additionally, it also is the basis for other major related activities, such as medical training, biomedical research, litigation inquiries, epidemiological studies, the control of the quality of health-care provision, clinical statistics, and — added by the present author — professional self-promotion and the History of Medicine.[63]

Seen from this perspective, the clinical record has basically served the same purpose since its origins, with virtually only two new interests: epidemiological and clinical statistics or the assessment of quality in health-care provision. A number of studies by historians of medicine addressing the case history in different time-periods and cultures have been published in the last few decades.[64] If the en-

63. Juan Martínez Hernández, «La Historia clínica», *Cuadernos de Bioética*, 17, 2006, pp. 58-61 (available at: www.redalyc.org/articulo.oa?id=87505904; Access November 22, 2012).

64. In this regard, it is worth noting that studies concerning the case history in Byzantine medicine have been added to the arsenal of available sources. In addition to earlier studies by the same author, see Bouras-Vallianatos, *Innovation in Byzantine Medicine. The Writings of John Zacharias Aktouarios (c.1275-c. 1330)*, pp. 74-103.

tire sub-sets of case histories produced throughout time is looked at from an historical perspective, it is clear that they have always been linked to a type of scientific practice and that they have been an instrument for the construction and transmission of medical knowledge. Moreover, it is clear that differences simply respond to the evolution of one single generic type of source — the clinical record — which by its very nature and multifaceted utility lends itself to a greater variety of changes and to a constant reinvention of its contents than theoretical medical manuals. In fact, from a bird's eye view, the history of the clinical record shows a shift in the focus of its primary interest throughout time, namely, prognosis in the Hippocratic *Epidemics* (fifth to fourth century B.C.), diagnosis and self-promotion in Galen (end of second century A.D.), and therapy — as well as self-promotion — after him.[65]

Simply explained, initially the aim appears to have been to build up and systematize medical knowledge in order to classify diseases and to identify prognosis. In other words, the *Epidemics* can be considered the earliest witness of medical research as part of an endeavour to understand the nature of the illness and to determine the progress of each disease. Later on up to the present — aside from the identification of new conditions and its collateral uses — the aim for the most part was to standardize the treatment for diseases. At the same time, the contents took multiple forms according to the reason for which they were written or collected: self-instruction, hospital or private practice records, advice for consultations conducted by letter, medical training, to offer new medical knowledge, to support a medical theory, to serve as a guide in similar cases, to confirm or reject established knowledge, etc. These purposes in turn had an impact on the contents, on the larger or lesser literary elaboration (if any, in some instances), and on the different organization as well as exhaustiveness of the recorded clinical information. Moreover, self-advertising also had a key role in the format applied to the clinical record and on the amount (or choice) of information captured on it: the need to impress the audience with a case narrative or the need to reinvent a very old clinical tool so as to suggest a touch of scientific progress and to create a novelty that illustrated the difference with earlier times as much as with contemporary colleagues. In short, it was only a matter of time that the clinical record generated a by-product as is the case report.

65. Álvarez Millán, «Graeco-Roman Case Histories and Their Influence on Medieval Islamic Clinical Accounts», p. 19-43.

Employing familiarity with modern biomedical journals in order to better understand this kind of historical source, it is important to make clear the basic conceptual difference of one and the same tool: the *clinical record* (case history, clinical chart, patient history, clinical file...) is the document that contains the patient's medical data (such as anamnesis or condition/s that prompted the consultation), the physician's assessments (including physical examination, diagnosis, tests results, personal comments or judgements), and the treatments prescribed to the patient. It is a file kept open during the entire patient's life and lasts as long as the physician-patient relationship goes on. The *case report*, on the other hand, is a particular clinical case concerning a given condition on a given patient. Normally it is an unusual ailment, a rare presentation of clinical signs of difficult diagnosis, a relatively common condition successfully cured in an innovative way, or a remarkable rare case of a common pathology on account, for instance, of the tumour size or location. It is a closed narrative focussing mainly on immediate signs and symptoms, a brief anamnesis, data concerning the physical examination or tests performed, development of the condition, difficulties in the diagnostic process, treatment, and follow-up until recovery or final outcome. And it is intended for publication. Although its aim is to build up medical knowledge and to communicate new medical information for general instruction, it is a very useful tool for professional self-promotion (and at present, also for the medical centre's visibility). A closely related term to bear in mind is *case series*, a group of individual clinical records employed in retrospective studies on a particular medical issue, chosen as a topic for a given medical research programme and its corresponding publication.

The case history — the clinical record in all its varying presentations — is another long-standing tradition which goes back to Antiquity. It is not as yet known whether medieval Islamic hospitals kept records of patients, but had they done so, they would probably have been destroyed after some time as they lose their validity, as happens at present (usually after five years without a user's new consultation or treatment). While it is uncertain whether al-Rāzī's *Kitāb al-Tajārib* (nearly 900 cases) were hospital records or just students and medical staff's notes, perhaps including al-Rāzī's own records, or a blend of them all, they certainly are clinical records. They are linked to medical practice as much as to medical training, like al-Hāshimī's *Kitāb al-Majālis fī l-ṭibb*. The latter, written a century later at Toledo, however, differs not only in the amount of compiled accounts (one hundred and seventy cases), but also in that they report the actual consultation recorded in notes taken during his medical training under two Andalusi physicians. We do not know

whether all court or ordinary medieval Islamic physicians — and for that matter, also the western — kept clinical records of their patients in everyday practice, but we know that some did and it is likely that in other instances the material was not preserved. Paper was an expensive product and, aside from Abū l-ʿAlāʾ Zuhr's reference about his using the margins of Ibn Sīnā's *Qānūn*, it is known that every piece of blank paper (in ordinary manuscripts or even official documents presumably outdated) was often used to write down other texts. In this regard, when summarising the deontological nature and purposes of the clinical record as described by a twenty-first-century practitioner, one of its roles was as a legal document useful in litigation. And indeed, whether or not the theory was ever put into practice, medieval Islamic treatises on medical deontology recommended keeping patients' records following (once more) the Greco-Roman tradition on this regard. The ninth-century physician Isḥāq b.ʿAlī al-Ruhāwī described the manner in which the physician must record all the information when visiting a patient. He advocated taking note of symptoms, pulse, uroscopy, diagnosis, diet, therapy, development of the condition, whether or not the physician announced the imminence of a crisis to the patient, and finally, whether the crisis occurred. Al-Ruhāwī recommended preserving the clinical record not only for future reference in the event the patient should ask for another consultation, but primarily because, if the patient died, the clinical record would be the basis for the authorities to determine whether or not the physician's work had been correct, and if not, then to forbid him to practice, or even to execute him.[66] Around two centuries later, Ṣāʿid b. al-Ḥasan (d. 1072) — another Christian physician — recommended that every physician went to practice in hospitals in order to observe rare diseases and even conditions unknown in the medical literature. He ended his advice by stating that «if [he] see (*sic*) any such rare condition, he should record it in his notebook and thus preserve it so that he and others can benefit from it».[67]

Without being exhaustive and in spite of variations in content, all the following texts — in one way or another — are clinical records in themselves: the case histories in the *Epidemics*, those gathered by Rufus of Ephesos, Galen's collection *On Prognosis* and all those he included in other works, al-Rāzī's casebook and his two other minor collections, al-Hāshimī's compilation of medical consul-

66. Martin Levey, *Medical Ethics of Medieval Islam with Special Reference to al-Ruhāwī's «Practical Ethics of the Physician»*. Philadelphia: The American Philosophical Society, 1967 (Transactions of the American Philosophical Society, vol. 57, part 3), p. 87.

67. Pormann, «Medical Methodology and Hospital Practice», p. 105.

tations, the clinical accounts dispersed in formal Islamic medical treatises by physicians such as Abū Marwān Ibn Zuhr, al-Shafrah, al-Shaqūrī or his grand-father, Abū l-ʿAlāʾ Zuhr's prescriptions to given patients, Arnald of Vilanova's *experimenta*, a number of *consilia*, and the reports by John Zacharias Aktouarios (d. 1330) in Byzantine medicine. All of them — and hopefully, new ones still to be unearthed — represent different stages and variants of the clinical record. Whether intended as a physician's basic tool in clinical work or as source material for research, students' training, self-learning or self-promotion, they emerged as an inherent product of medical practice as a scientific discipline. Whether we may sub-classify them now as clinical records, case reports or case series, they served to build up and transmit medical knowledge. They are part of the clinical record's development in tandem with the primary needs of state-of-the-art medicine in each time-period, as well as with the physicians' interests when they dealt with this particular medical-literary genre. There is no basis for identifying the birth of the clinical record with the sixteenth-century *observatione*, as has been suggested.[68] There is only one difference between the two time periods, namely, the printing press.

68. The *observatione* was a type of clinical record divided into two parts, the prescription (*curatio*) and the commentary (*scholion*), which overshadowed the therapeutic part of the case narrative. This model is thought to have been devised by the Jewish physician Amatus Lusitanus, who wrote a vast number of *observatione* known as *Centuriae*, published in seven instalments between 1551 and 1566. Stating that the clinical record as a medical-literary genre begins in the sixteenth-century with the *observatione* is as historically inaccurate as suggesting that only the material from the Cairo Genizah is useful for studying medical practice in medieval Islam. Amatus Lusitanus perhaps reformulated the *consilium* or gave it a new twist to reinvent the case report. On the other hand, it is risky to attribute the originality of the *observatione* model to a sixteenth-century physician, for even if in isolated instances or by chance, the pattern might be found in earlier time-periods. Gianna Pomata, «The Recipe and the Case. Epistemic Genres and the Dynamics of Cognitive Practices», in Kaspar von Greyerz, Silvia Flubacher, Philipp Senn (eds.), *Wissenschaftsgeschichte und Geschichte des Wissens im Dialog. Schauplätze der Forschung / Connecting Science and Knowledge. Scenes of Research*. Göttingen: V&R unipress, 2013, pp. 148 and 150-153. For a commented analysis of G. Pomata's narrative on the *observatione*, see Joël Coste, «Genres littéraires médicaux à l'époque moderne. Analyse conceptuelle et application aux recueils d'observations médicales du xvie au milieu du xixe siècle», in in L. Moulinier-Brogi, M. Nicoud (eds.), *Écritures médicales. Discours et genres de la tradition antique à l'époque moderne*. Lyon, Avignon: CIHAM Éditions, 2019, pp. 335-351 (anexe 353-361). For another view on Amatus Lusitanus's *observatione*, see Stella Fatović-Ferenčić, «Amatus Lusitanus' sixth *Centuria*'s medical reports and the possibilities of their interpretations», in J. Coste, B. Fantini, L. L. Lambrichs (eds.), *Le concept de pathocénose de M. D.* Grmek — *Une conceptualisation de l'histoire des maladies*, Genève, Droz, 2016.

Naturally, the clinical record went on evolving throughout time. Efforts to systematize its contents and structure only began in the late nineteenth-century due to the Medical Establishment's growing awareness of its importance as a research tool and its use as legal evidence at court. As Gunter Risse and other scholars have noted, the most evident change was from words towards numbers in favour of the quantified physiological parameters that could be graphically displayed and easily gauged against standardized norms.[69] Yet it was from the 1960s onwards when a basic specific format or medical information system began to be adopted for medical practice in the Western world. So it was only then when the clinical record's contents and structure became progressively homogeneous until our present computerized and/or electronic version for clinical purposes on the one hand, and the case report for transmission of knowledge on the other.[70] And of course, while clinical records are used for research and epidemiological statistics, the case report of unusual cases never lose its didactic function for medical instruction, and even less, its value for self-promotion in the medical marketplace.

3.2. Books on Khawāṣṣ and Books of Secrets

In medieval Islam, another type of writing associated with therapeutics — although not precisely to pharmacology — is the literature on *khawāṣṣ*. It deals with the specific properties of substances, also deemed occult or hidden properties since they cannot be rationally explained. For this reason, works on this topic were for a long time classified as magic. This Islamic medical-literary genre focuses extensively on the parts of animals, and so in some works the title reads «on the usefulness of animals», «on the usefulness (*manāfiʿ*) of parts of animals», or the more

69. In other words, the clinical record developed into what Nicholas Jewson in 1976 designated as «the disappearance of the sick-man from the medical cosmology». Guenter B. Risse and John Harley Warner, «Reconstructing Clinical Activities: Patient Records in Medical History», *Social History of Medicine*, 5 (1992), p. 192; Nicholas D. Jewson, «The Disappearance of the Sick Man from Medical Cosmology, 1770-1870», *Sociology*, Vol.10, No.2, (1976), pp. 225-244.

70. See Richard F. Gillum, «From Papyrus to the Electronic Tablet: A Brief History of the Clinical Medical Record with Lessons for the Digital Age», *The American Journal of Medicine*, 126, issue 10 (October 2013), pp. 853-857.

generic expression *fawā'id al-ṭibbīyah* (useful medical procedures).[71] Likewise, the presumed effectiveness of procedures they contain are supposedly known empirically and, therefore, they can also be considered as «tested remedies». In fact, the therapeutic remedies advocated in these works are usually sanctioned with the term *mujarrab*, «tested», which in all likelihood, at that time was understood in the same comforting sense of experimented, or certified by testing. For this reason, it was assumed for a long time that all treatises with titles including the term *tajārib* — and more particularly *mujarrabāt* (experiences) — contained material of magical character.[72] For a long time this genre was disregarded as a suitable subject for study by historians of medieval Islamic medicine, and, aside from isolated endeavours, it has only recently begun to receive the attention it deserves.[73] Although the material became progressively expanded, the *khawāṣṣ*

71. An example is the case of a beautifully illuminated manuscript preserved at the Escorial Library, Madrid, by a fourteenth-century Eastern author: Ibn Durayhim al-Mawṣilī, *Kitāb Manāfi'al-ḥayawān (Libro de las utilidades de los animales)*. Facsimile edition with Spanish translation by Carmen Ruiz Bravo-Villasante. 2 vols. Madrid: Kaydela and Editora Patrimonio Nacional, 1990.

72. For medieval Islamic sources concerning works on animals covering their biology, the usefulness of their parts, and specific (or occult, magical) properties of particular organs, see Manfred Ullmann, *Die Natur- und Geheimwissenschaften im Islam*, Leiden: E. J. Brill, 1972, pp. 5-43 and 393-416. On the confusion of *khawāṣṣ* with *mujarrabāt*, see Rosa Kuhne Brabant, «Hacia una revisión de la bibliografía de Abū l-'Alā' Zuhr (m. 1130/1)», *Al-Qanṭara*, 13.2 (1992), pp. 581-585, and Abū l-'Alā' Zuhr, *Kitāb al-Muŷarrabāt*, pp. 29-31.

73. Without being exhaustive, studies concerning this literature in chronological order are: Albert Z. Iskandar, *A Study of al-Rāzī's Medical Writings with Selected Texts and English Translations*, D. Phil. thesis. Oxford, 1959, Chapter 13; Manfred Ullmann, «Khāṣṣa», *The Encyclopaedia of Islam*, New ed., 11 vols., Leiden: Brill, 1960-2002, (thereafter *EI2*), vol. 4, pp. 1097-8; Carmen Ruiz Bravo-Villasante, *Libro de las utilidades de los animales* [by Ibn Durayhim al- Mawṣilī]. Madrid: Fundación Universitaria Española, 1980; J.O. Leibowitz, S. Marcus, *Sefer Hanisyonot. The Book of Medical Experiences attributed to Abraham ibn Ezra*, Jerusalem: The Magness Press and The Hebrew University, 1984; Cristina Álvarez Millán, «El *Kitāb al-Jawāṣṣ* de Abū l-'Alā' Zuhr: materiales para su estudio», *Asclepio*, 46 (1994), pp. 151-174; Anna Contadini, «The Ibn Buḫtīšū' Bestiary tradition. The Text and its Sources», *Medicina nei Secoli*, 6 (1994), pp. 349-364 (see also additional bibliography by her in A. Contadini (ed.), *Arab Painting. Text and Image in Illustrated Arabic Manuscripts*. Leiden, Boston: Brill, p. 15); Y. Tzvi Langermann, «Materia Medica et Magica from Animals, including a Long, Unknown Passage from al-Mas'ūdī», *Aleph*, 11.1 (2011), pp. 169-178; Fabian Käs, *Die Risāla fī l-Ḫawāṣṣ des Ibn al-Ǧazzār: Die arabische Vorlage des Albertus Magnus zugeschriebenen traktats De mirabilibus mundi*. Wiesbaden: Harrasowitz, 2012; Liana Saif, «Between Medicine and Magic: Spiritual Aetiology and Therapeutics in

lore is not genuinely Islamic. On the contrary, it draws from a long tradition going back to Greek antiquity and it was inherited along with the bulk of Greco-Roman knowledge.

One of the largest compilations concerning the knowledge of magical properties of animal, vegetable and mineral products is Abū l-ʿAlāʾ Zuhr's *Kitāb al-Khawāṣṣ* (Book on Occult Properties), also preserved in several manuscripts under the title *Mujarrabāt al-Khawāṣṣ* (Experiences of Occult Properties) and *Jamʿ fawāʾid al-muntakhaba min al-Khawāṣṣ al-mujarrabah* (Collection of Useful Procedures Selected from Time-Tested Occult Properties). Judging by the large number of extant manuscript copies, this work must have enjoyed great popularity in medieval Islam. The treatise attests to the medieval concern with accumulation and perpetuation of knowledge as much as to the need for learned physicians to master Greco-Roman sources as a requisite to gaining professional recognition. In this respect, in this work Abū l-ʿAlāʾ Zuhr collected a vast amount of material attributed to a large number of Greco-Roman and Islamic sources, and the book stands as a very knowledgeable complement to his learned medical works.[74]

The organization of contents within the *khawāṣṣ* literature sometimes follows an alphabetical order or, in others, sometimes is arranged by types of animals, usually including the human being (*insān*) as well as a broad range of animal species, from beasts of burden and cattle up to exotic and wild animals, which for the most part had been never seen personally by the author. The kind of wondrous remedy advocated in this medical-literary genre is of this tenor:

Medieval Islam», in Siam Bhayro and Catherine Rider (eds.), *Demons and Illness from Antiquity to the Early-Modern Period*. Leiden, Boston: Brill, 2018, pp. 331-337; Lucia Raggetti, «Tracing the sources. A rare case of explicit scholarly practice in an Arabic manuscript tradition», *Comparative Oriental Manuscript Studies Newsletter*, 8 (July 2014), pp. 28-32; L. Raggetti, «"The Science of Properties" and its Transmission», in J. Cale Johnson (ed.), *In the Wake of Compendia: Infrastructural Contexts and the Licensing of Empiricism in Ancient and Medieval Mesopotamia*. Berlin, Boston: W. de Gruyter, 2016, pp. 159-176; and L. Raggetti, *ʿĪsā b. ʿAlī's Book on the Useful Properties of Animal Parts: Edition, translation and study of a fluid tradition*. Berlin, Boston: W. de Gruyter, 2018.

74. On the sources employed for the compilation of this work, see Álvarez Millán, «El *Kitāb al-Jawāṣṣ* de Abū l-ʿAlāʾ Zuhr», p. 160; Álvarez Millán, «Abū l-ʿAlāʾ Zuhr», *Biblioteca de al-Andalus*, vol. 6, pp. 342-343; and Nikolaj Serikoff, «Dog-Knights and Elulargency: Greek Ghost-Words in Medieval Arabic Sources», in S. Takacs and C. Sode (eds) *Novum Millenium: Studies in Byzantine History and Culture in Honor of Paul Speck*, London: Ashgate, 2001, pp. 357-368.

> If you hang some hair from a dead person around an aching tooth, this will relieve the pain,[75] or another example, when a woman places the stone that is called «the eagle's impregnator» on her lap, giving birth is difficult for her; however, if she holds it in her hand or attaches it to her loins, she gives birth on the spot.[76]

Amongst medieval Islamic learned physicians, like the surgical literature, this knowledge was a literary tradition worthy of being known, transmitted and cultivated as erudition for the reasons alluded to above. Occasionally, one encounters this kind of traditional knowledge in formal theoretical medical treatises and pharmacological works, for occult properties of particular materials and the use of certain ingredients were incorporated into the rational Hippocratic-Galenic medical system. However, like surgery again, this does not mean that medieval Islamic learned physicians carried out these kinds of healing procedures in daily practice. If we take Abū l-ʿAlāʾ Zuhr as an illustrative example once more, his theoretical medical writings are devoid of references to these kinds of practices. As for his *Kitāb al-Mujarrabāt*, it only contains two references, one to wolf's liver and another to a specific kind of string with which a viper is to be strangled, both taken from Galen. In the second instance, he praises it after having successfully employed it as a last recourse on himself when affected by quinsy (*ḏubḥah*, *squinancia*), usually a fatal swelling of the throat; in the first instance, he mentions it in order to question the therapeutic properties advocated by Galen.[77]

The distinction of this genre from traditional magical treatises resides in the fact that the described hidden properties of the animal parts were mainly assigned med-

75. Attributed to Hermes. Abū l-ʿAlāʾ Zuhr, *Kitāb al-Khawāṣṣ*, Istanbul, Topkapi Saray Library, Col. Aḥmad III, MS. 2068, fol. 2a; *Kitāb Mujarrabāt Kitāb al-Khawāṣṣ*, Oxford, Bodleian Library, Oriental Collections, MS. Marsh 520, fol. 1b.

76. Gerrit Bos and Y. Tzvi Langermann, «Pseudo-Galen, *al-Adwiya ʾl-maktūma*, with the commentary of Ḥunayn ibn Isḥāq», *Suhayl. Journal for the History of the Exact and Natural Sciences in Islamic Civilisation*, 6 (2006), p. 95. Other examples can be found in P. E. Porman and E. Savage-Smith, *Medieval Islamic Medicine*. Edinburgh: Edinburgh University Press, 2007, pp. 148 and 153; and Álvarez Millán, «The Clinical Account in Medieval Islamic Medical Literature: *Tajārib* and *Mujarrabāt* as Source», pp. 196-198.

77. Abū l-ʿAlāʾ Zuhr, *Kitāb al-Muŷarrabāt*, entry 147, pp. 135-136 (transl.), p. 59 (Arabic text) and entry 106, pp. 117-118, p. 40. With regard to the inclusion of the remedy for *squinancia* in Bernard de Gordon's *Lilium medicinae*, see Olsan, «Charms and Prayers in Medieval Theory and Practice», p. 353-354.

ical uses while proper magical procedures and invocations were avoided.[78] Although some books on *khawāṣṣ* occasionally include the occult properties of a few minerals and plants, extant treatises primarily focused on one of the nature's kingdoms, the animal, or sometimes also only on stones, which can be classified as lapidaries. However, although some works of this genre are luxury copies beautifully illuminated and some scholars even make the term explicit in the publication's title, treatises on *khawāṣṣ* also differ from the medieval western bestiary. The nature of *khawāṣṣ* collections is better conceptualized as medico-zoographical literature. Likewise, books on *khawāṣṣ* are not exactly the same as the «books of secrets» of the Western tradition. The latter are vernacular compilations of varied material ranging from prescriptions up to recipes or advice concerning medicine as well as alchemy, perfumery, cosmetics, veterinary, metallurgy and other topics. Using William Eamon's words, both genres share «the arcane secrets not even known to the authorities». Said in passing, the versatile thematic scope of western books of secrets also contrasts with medical recipe books as a genre, as will be seen in the following section. It remains to be studied whether the medieval literature on *khawāṣṣ* entered later domestic common-place books, in which an individual collected all kind of practical and esoteric material for his personal use, since there seem to be manuscripts of this kind in libraries that have not yet drawn attention from scholars. In the meantime, however, it would also be worth assessing medieval Islamic works on *khawāṣṣ* applying as a priority Eamon's proposal: who wrote them and why, who read them, and what does their study contribute to our understanding of the medieval Islamic culture.[79]

78. The difference can be seen comparing the contents of *khawāṣṣ* literature, for instance, with the ninth-century magical treatise by Ibn Abī Sarḥ, written in the year 887 and addressing procedures for rain-making, making cows drink, testing a wife's fidelity, the effect of moonlight in circumcision, infant mortality, plague avoidance, cure of snake bite and drunkenness, charms against *jinns*, cure for fever blisters and other conditions, charms to ensure fine teeth, aiding the completion of a journey, speeding the unwelcome guest, curing a mangy camel, and charms to make love endure amongst other purposes, all of which with no formal structure or order. James A. Bellamy, «The *Kitāb ar-Rumūz* of Ibn Abī Sarḥ, Translated and Annotated», *Journal of the American Oriental Society*, 81.3 (1961), pp. 224-246.

79. William Eamon, «How to Read a Book of Secrets», in E. Leong and A. Ranking (eds.), *Secrets of Knowledge in Medicine and Science*, 1500-1800. Farhnam: Ashgate, 2011, p. 23 and 24.

3.3. Medical Dispensatories and Medical Recipe Books

In addition to the literature on *materia medica* listing simple drugs and its properties, pharmacological literature also produced two closely related—but distinct—kinds of works on compound drugs: pharmacopoeias and *aqrābāḏīn* on the one hand, and medical recipe books on the other.

Pharmacopoeias are compilations of pharmacological recipes used by practitioners and pharmacists as a guide for prescriptions and manufacturing. More plainly put, this literature deals with standard formulas of a universal nature.[80] While works belonging to this genre in the western medieval medical tradition are also referred to as *antidotarium, vademecum*, dispensatory and formulary, in Arabic they are known as *aqrābāḏīn* and *dustūr al-bimaristān*.[81] This genre can be found either as part of a larger work on medicine such as Ibn Sīnā's *Qānūn* (Book V, *Jumla* I)[82] or it might form an independent treatise, such as those by al-Kindī (d. 870), Sābūr ibn Sahl (d. 869), Ibn al-Tilmīḏ (1165), Al-Samarqandī (d. 1222), al-Qalānisī (d. 1165), Ibn Abī l-Bayān (d. 1236) or al-Kūhīn al-ʿAṭṭār (d. after 1260).[83] In these works, remedies are presented according to the type of drug—for

80. With regard to the use of the terms formula, recipe and prescription, I will slightly differ from that adopted by Leigh Chipman and Efraim Lev on the one hand, and Gianna Pomata as well as myself elsewhere, on the other. As Pomata puts it, Chipman and Lev «define "recipe/formula" as generalized and theoretical suggestions for the treatment of a disease, to be found in medical books or pharmacopoeias; they use "prescription" (...) for the individualized form of recipe containing specific instructions for the treatment of a particular patient». Pomata opts for distinguishing between «formula» on one side, and «recipe» for what they call prescription on the other, which also is the system I chose in my early study of Abū l-ʿAlāʾ Zuhr's *K. al-Mujarrabāt* published in 1994, *v.g.* formula as an established way to prepare a standard remedy and recipe as the note written by a physician containing a treatment intended for a particular ailment or patient (that is, a prescription). Chipman, Lev, «Arabic Prescriptions from the Cairo Genizah», pp. 75-94, esp. Hunt's quotation in p. 76; Pomata, «The Recipe and the Case. Epistemic Genres and the Dynamics of Cognitive Practices», p. 139, footnote 32; Abū l-ʿAlāʾ Zuhr, *Kitāb al-Muŷarrabāt,* pp. 41-42. In the light of materials discussed here, throughout this essay I will distinguish between formula and prescription in tune with Chipman and Lev, using «recipe» as a generic term.

81. See B. Lewin, «Aḳrābādhīn», *EI*$_2$,vol. 1, pp. 354-355.

82. Ibn Sīnā, *Al-Qānūn fī l-ṭibb*, III, pp. 310-407.

83. Martin Levey, *The Medical Formulary or Aqrābādhīn of al-Kindī*. Madison: University of Wisconsin Press, 1966; Sābūr Ibn Sahl, *The Small Dispensatory*. Transl., Study and Glossaries by Oliver Kahl. Leiden: Brill, 2003; *The Dispensatory of Ibn at-Tilmīḏ: Arabic Text, English Translation, Study and Glossaries* by O. Kahl. Leiden: Brill, 2007; M. Levey and N. al-Khaledy,

instance, syrups, electuaries, pills, pastilles, powders, eye remedies, gargles, hieras, myrobalan confections, lohochs, oils and salves, suppositories, pessaries, cataplasms, dentifrices, pomades, etc. The formula typically reports the compound's uses, ingredients, the process of preparation and dosage. Within each section dealing with each type of drug, the recipes usually appear well organized so as to facilitate the use of its contents. In some instances, the information can also be organized by body parts or ailments from head to foot, as is the case with Book V, *jumla* II of the *Qānūn* and with al-Rāzī's *aqrābāḏīn*.[84] As discussed above with regard to ascertaining the source's typology by analysing the contents instead of attending to the title, some works classified as *aqrābāḏīn* might need to be re-classified in the future in the light of — or in comparison with — the literature on medical recipe books. In this regard, in addition to the format of al-Rāzī's *aqrābāḏīn*, an analysis of percentages concerning the number of formulas and prescriptions in different works suggests that some treatises usually classified as a work on *aqrābāḏīn* might perhaps be a medical recipe book, as is the case with al-Kindī.[85]

Some of the extant *aqrābāḏīn* were prepared specifically for use in hospitals and some of those mentioned above became widely known. However, in spite of a stated authorship and having been written by professional scholars, these works contain many entries given the general heading «recipe useful for» or «another recipe for such and such a condition» as well as a number of compound remedies attributed to earlier physicians. The expression *mujarrab* also appears occasionally at the end of some recipes, but the presence of potentially magical ingredients is very scarce. As a whole, these collections of pharmacological compound

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The Medical Formulary of Al-Samarqandī. Philadelphia: University of Pennsylvania Press, 1967; Muḥammad b. Bahrām al-Qalānisī, *Aqrābāḏīn*, ed. M. Zuhayr Bābā. Aleppo, 1983; Paul Sbath, «Le Formulaire des hôpitaux d'Ibn abil Bayan, medicin du bimaristan annacery au Caire au XIIIe siècle», *Bulletin de l'Institut d'Egypte* 15 (1932-33), pp 9-78. Al-Kūhīn al-ʿAṭṭār, *Minhāj al-dukkān wa-dustūr al-aʿyān*, ed. Ḥasan al-ʿĀṣī. Beirut: Dār al-Manāhil, 1992. On this last author and as a monographic study of pharmacy and pharmacists in medieval Cairo, see Leigh Chipman, *The World of Pharmacy and Pharmacists in Mamlūk Cairo*. Leiden: Brill, 2010.

84. Abū l-ʿAlāʾ Zuhr, *Kitāb al-Muŷarrabāt*, p. 40, footnote 69. Ibn Sīnā, *Al-Qānūn fī l-ṭibb*, III, pp. 413-442. For al-Rāzī's *aqrābāḏīn* and the manuscript containing this work, see Emilie Savage-Smith, *A New Catalogue of Arabic Manuscripts in the Bodleian Library, Oxford, Volume 1: Medicine*. Oxford: Oxford University Press, 2011, pp. 676-678.

85. See Abū l-ʿAlāʾ Zuhr, *Kitāb al-Muŷarrabāt*, pp. 43-45.

drugs are characterized by their systematic organization, their comprehensiveness and their being intended as formal treatises.

Medical recipe books are, in contrast, compilations for personal use. Those composed in medieval Islam might have eventually circulated as treatises (like the collections of a physician's case records and medical prescriptions), or they might have been included as a necessary complement to a larger treatise. As a whole, medical recipe books contain tested treatments — that is, remedies proved effective. As far as medieval Islamic medicine is concerned, some of these works have not yet been studied, as for instance, those in the National Library of Medicine and catalogued by Emilie Savage-Smith: *Fawā'id al-ḥasanīyah fī al-mujarrabāt al-ṭibbīyah* (*Useful Information for al-Ḥasan on Tested Medical Remedies*) written by Muḥammad ibn Thālib al-Shīrāzī in the seventeenth century for al-Ḥasan ibn Abī Yaḥyā ibn Barakat, and the untitled treatise on medical procedures and remedies (*mujarrabat*) by Muḥammad ibn Khamrah, an author of uncertain chronology.[86] On the other hand, some other works might have been edited and translated without being fully aware of its potentially belonging to this medical-literary genre. This might have happened not only on account of the treatise's more or less literary title, but also because its literary and scientific contexts have until now been overlooked by scholars specializing in medieval Islamic medicine, as has also been the case with specialists in the western medical tradition. For this reason, it will be useful to look at this particular typology in the medieval West through a summary of the seminal study by Lluís Cifuentes, an exhaustive — and worth reading — analysis of sources mainly of Catalan origin dating from the last decades of the thirteenth century onwards.[87] From this perspective, medieval Islamic medical recipe books will be better understood and its differential characteristics, more easily discerned.

86. E. Savage-Smith, *Islamic Medical Manuscripts at the National Library of Medicine*, 2004 (available at: www.nlm.nih.gov/hmd/arabic). The manuscripts are MS A 10, *Fawā'id al-ḥasanīyah fī al-mujarrabāt al-ṭibbīyah* (*Useful Information for al-Ḥasan on Tested Medical Remedies*) and MS A 91, item 4, *Therapeutic manual on mujarrabat* by Muḥammad ibn Khamrah (https://www.nlm.nih.gov/hmd/arabic/ther11.html).

87. Lluís Cifuentes i Comamala, «El receptari mèdic baixmedieval i renaixentista: un gènere vernacle», in Lola Badia, Lluís Cifuentes, Sadurní Martí and Josep Pujol (eds.), *Els manuscrits, el saber i les lletres a la Corona d'Aragó, 1250-1500*. Barcelona: Publicacions de l'Abadia de Montserrat, 2016, pp. 103-160 (Textos i estudis de cultura catalana, 210), available at: https://www.sciencia.cat/db/cercador.htm?bib=21259.

As a basic concept, in the western late Middle Ages, the medical recipe book is neither a manual on therapy nor a dispensary describing the composition and preparation of compound drugs, but a compilation of remedies useful for treating and preventing disease, either intended for one's own use or resulting out of the legal and administrative rules to which apothecaries were subjected. The latter is defined by Cifuentes as a systematic record of medical prescriptions produced and dispatched in the apothecary's shop in chronological order. Although these prescriptions were normally destroyed once they had lost their validity, they coexisted with other administrative documents with which they can be mistaken or which explain their unexpected discovery in a modern archive: an accounting manual, delivery notes, and a ledger. At the other end of the spectrum is the medical recipe book for self-use, which Cifuentes classifies as two distinct types: the professional and domestic recipe book. The nature of these three types of medical recipe books made this medical-literary genre deeply permeable to vernacular languages and open to information transmitted orally as well as prone to including excerpts from written sources.[88]

Cifuentes advances several relevant ideas that explain the characteristics of this genre which are worth mentioning here. Firstly, its purpose is to attend to the practical needs of the compiler. Secondly, authorship is reflected in the contents and its organization, so that — since initially there is not a deliberate intention to write a book — they usually lack title. Thirdly, the medical recipe book is neither an evolution nor an emulation of similar texts, such as collections of remedies preserved in monastic environments or academic physicians' *experimenta*. Moreover, the compiler of a medical recipe book does not belong to the university *milieu*, and it can be classified as professional medical recipe book when resulting from medical practice, and domestic when collected to be used for household self-help.[89] Nevertheless, according to the analysis of other sources, Cifuentes equally argues that university physicians also composed this type of medical writing addressed to lay urban audiences and medical practitioners of lower professional status. Far from a process of popularization of university medical knowledge, however, these compilations are not collections of prescriptions or tested remedies, but treatments intended as an addition to the inherited medical tradition, and as a platform for social and

88. Cifuentes, «El receptari mèdic baixmedieval i renaixentista: un gènere vernacle», pp. 103-116.

89. Cifuentes, «El receptari mèdic baixmedieval i renaixentista: un gènere vernacle», pp. 124-132 and 132-146.

professional promotion. Given this background, each medical recipe book presents its own particular characteristics.[90]

The latter also applies to medieval Islamic recipe books. With regard to pharmacists, in medieval Islam ordinary druggists were supervised by the market inspector or *muḥtasib* (to avoid fraud amongst other reasons).[91] Otherwise, their professional activity did not generate the kind of administrative documentation — if any at all — of medieval western apothecaries. Perhaps hospital pharmacies kept records of dispensed medicaments, but whether or not they were destroyed when considered useless, the fact is that — with the exception of the Ottoman culture and the Cairo Genizah — the fate of Islamic administrative or official documents are a mystery. In comparison with manuscript copies, few of them survive in libraries, archives or other institutions at present. Some of the features described by Cifuentes for the western medical tradition seem to apply to those analysed below, all of them from al-Andalus, but also some differences emerge.

4. Medieval Islamic medical recipe books (collections of tested remedies)

4.1. Ibn Muḥammad al-Sūsī's al-Tajārib al-ṭibbīyah

There is no information about this medieval Islamic physician. His work is preserved in just one manuscript copy at the Royal Library in Rabat (Morocco) and it was discovered and catalogued by the former curator Muḥammad al-ʿArabī al-Khaṭṭābī.[92] This scholar identified the author, whose name is given as Ibn Muḥam-

90. Cifuentes, «El receptari mèdic baixmedieval i renaixentista: un gènere vernacle», p. 115 and 150.

91. On this topic, see Martin Levey, «Fourteenth Century Muslim Medicine and the Ḥisba», *Medical History*, 7 (1963), pp. 176-182; and ʿAbd al-Raḥmān b. Naṣr al-Shayzarī, *Nihāyat al-Rutba fī Ṭalab al-Ḥisba* (The Utmost Authority in the Pursuit of Hisba). Translated with an Introduction and Notes by R. P. Buckley. Oxford: Oxford University Press, 1999.

92. Rabat, al-Khizānat al-Malikīyah, Ms. 10404. M. al-ʿArabī al-Khaṭṭābī, *Fahāris al-Khizānat al-Malikīyah, mujallad al-thānī* (Catalogues of the Royal Library, vol. II. Section of the Manuscripts of Medicine, Pharmacy and Allied Sciences). Rabat, 1982, pp. 48-49. M.ʿA. al-Khaṭṭābī, *Al-Ṭibb wa-l-aṭibbāʾ fī l-Andalus al-Islamīyah*. 2 vols. Beirut: Dār al-Gharb al-Islāmī, 1988, I, pp. 48-49.

mad al-Sūsī, with a tenth-century physician named Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī (938-1013), whose biography appears recorded by Ibn al-Abbār (d. 1260) in his biographical dictionary devoted to savants and scholars who lived in al-Andalus.[93] Al-Khaṭṭābī never justified or documented this choice and, even if a plausible possibility, al-Sūsī's identity as the author still remains to be demonstrated. In the absence of solid evidence, just a likely possibility or an implicit «this is it because I say so» leaves open the identification of *al-Tajārib al-ṭibbīyah*'s author. Aside from the edition of the Arabic text and the description of the manuscript copy, Samir Kaddouri provides little information. With regard to al-Sūsī's identity, a name's partial coincidence or a similarity in the book's title is not enough, for it may apply equally to other physicians unknown to us.[94] Moreover, in two other publications, this scholar also identified one Abū Bakr al-Sūsī al-Qurṭubī with Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī as well.[95] A list of chronologically earlier Umayyad viziers — none of which exactly corresponds to the name mentioned in al-Sūsī's text — is not a proof either. As for other arguments presented in the editor's brief introduction to the edited work, the presence of a peculiar term for «vineyard» and weight terminology used in al-Andalus only proves that Ibn Muḥammad al-Sūsī was Andalusi or wrote his work in al-Andalus, not that he was Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī (938-1013).

The latter was born at Susa (present Tunisia), but he moved to Cordoba and became court physician at the Umayyad caliphate (929-1031), which from 981 onwards was actually ruled by the vizier and dictator al-Manṣūr Ibn Abī ʿĀmir

93. Ibn al-Abbār, *Kitāb al-Takmila li-kitāb al-ṣila*, ed. F. Codera. Madrid, 1889 (Biblioteca Arabico-Hispana; 6), p. 524, biography num. 1475.

94. While it is a major common feature that medieval Islamic physicians are bombastically praised in biographical dictionaries, undoubtedly, either in medieval Islam in general or in al-Andalus, there also were many physicians whose existence remains virtually unknown to us or has been exposed accidentally. For example, the Andalusi physician Abū Tammām Ghālib b. ʿAlī b. Muḥammad al-Lakhmī al-Shaqūrī (d. 1340): despite his rare curricular merits of studying medicine at a hospital in Cairo, being said to have composed a number of works and having worked at the service of two North African sultans, has passed unnoticed and is not recorded in medical biographical dictionaries. He is a physician unknown today but for the fact that his grandson reported the information in his works. Cf. H.P.J. Rénaud, «Un médecin du royaume de Grenade: Muḥammad aš-Šaqūrī», *Hesperis*, 33 (1946), p. 32.

95. This Abū Bakr al-Sūsī al-Qurṭubī is mentioned by Aḥmad b. ʿĪsā al-Hāshimī (d. 1077) as the physician with whom one of his teachers, the Cordoban Manṣūr b. Muḥammad, had learned

(g. 978-1002) and then by his descendants until the eventual dismemberment of the Cordoban caliphate into the so-called Taifa Kingdoms.[96] According to the information provided by Ibn al-Abbār, Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī was killed in 1013 at Cordoba during the *fitna*. Within the literary genre of *ṭabaqāt*, or bio-bibliographical dictionaries, none of the four extant works devoted to medicine records his existence. This may not come as a surprise with regard to the thirteenth-century eastern works by al-Qifṭī (d. 1248) and Ibn Abī Uṣaybiʿah (d. 1270), the latter being an indispensable source in the discipline whose recently published critical edition, English translation and study we all heartily celebrate.[97] However, the fact that his biography was not mentioned in the dictionaries by the western Islamic scholars Ibn Juljul (d. ca. 994) and Ṣāʿid al-Andalusī (d. 1070) seems rather striking, for Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī must have not only been a contemporary of Abū l-Qāsim al-Zahrāwī, but also Ibn Juljul's countryman at Cordoba.[98] Otherwise, in the usual style of bombastic praise employed by biographers, Ibn al-Abbār describes him as an excellent physician, an expert in medical knowledge and skilful in the treatment of patients (*māhir al-ʿilāj*). As for his written production, all that is mentioned is that his *Kitāb al-Mujarrabāt* became famous, but Ibn al-Abbār also acknowledges in passing his uncertainty about whether it

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medicine. Cf. al-Hāšimī, *Kitāb al-Maŷālis fī l-ṭibb*, p. 8; S. Kaddouri, «al-Hāšimī, Abū Ŷaʿfar», *Biblioteca de al-Andalus*, 2004-2012, vol. 1, p. 422.

96. The date of Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī's arrival in al-Andalus is unknown, and therefore he must have certainly worked for the ʿĀmirī dynasty, but it is as yet difficult to ascertain whether he ever was at the service of the Umayyad caliphs ʿAbd al-Raḥmān III al-Nāṣir (r. 300-350/912-961), al-Ḥakam II al-Mustanṣir (r. 350-366/961-976), or Hishām II (r. 366-367/976-978).

97. Al-Qiftī, *Taʾrīj al-ḥukamā'*, ed. J. Lippert (Leipzig, 1903; reprint. F. Sezgin, Frankfurt am Main: Institute for the History of Arabic Islamic Science at the Johann Wolfgang Goethe University, 1999). *A Literary History of Medicine: The ʿUyūn al-anbā' fī ṭabaqāt al-aṭibbā' of Ibn Abī Uṣaybiʿah*. Edited and translated by Emilie Savage-Smith, Simon Swain and Geert Jan van Gelder, with Ignacio Sánchez, N. Peter Joosse, Alasdair Watson, Bruce Inksetter, and Franak Hilloowala. 3 in 5 volumes Leiden: Brill, 2020. (Handbook of Oriental Studies, Section 1, The Near and Middle East, Vol. 134).

98. Ibn Juljul, *Ṭabaqāt al-aṭibbā' wa-l-ḥukamā'*, ed. F. Sayyid. Beyrut: Mu'assasat al-Risāla, 1985. Ṣāʿid al-Andalusī, *Ṭabaqāt al-umam. Historia de la Filosofía y de las Ciencias o Libro de las categorías de las naciones*. Annotated Spanish transl. by Eloísa Llavero Ruiz. Madrid: Trotta, 2000.

was compiled by the author himself or was collected afterwards by someone else. This last possibility would not be surprising, since it was what happened with al-Rāzī's *K. al-Tajārib* in the East and Abū l-ʿAlāʾ Zuhr's *K. al-Mujarrabāt* in al-Andalus.

Provided it is him who is referred to, the treatments devised by Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī must have enjoyed a good reputation, for he was cited by well-known Andalusi physicians. Chronologically, in tenth-century Cordoba, Abū l-Qāsim al-Zahrāwī (d. ca. 1013) informs us that Abū Muḥammad al-Sūsī wrote a short treatise on child circumcision (*Risālah fī taṭhīr al-ṣibyān*) and included the treatment he recommended as post-surgical therapy in the eighteenth chapter of his *Kitāb al-Taṣrīf li-man ʿajiza ʿan al-taʾālīf*, the famous medical work whose surgical section became a most influential source in the medieval West.[99] In eleventh-century Toledo, Ibn Wāfid (d. 1075) — considered one of the best Andalusi pharmacologists — also recorded a formula attributed to al-Sūsī in his *Kitāb al-Wisād fī l-ṭibb*. Inserted in the chapter on recipes for the eye, it is a medicament prepared as small stamped compounds (pl. *ṭawābiʿ*) or very compact pills to be dissolved in rose water with which — according to Ibn Wāfid's statement — al-Sūsī achieved great renown.[100] In the chapter concerning bladder conditions, Ibn Wāfid quotes him again to recommend al-Sūsī's treatment of ulcers inside that organ, consisting of the administration of a diuretic followed by a remedy to heal the scar.[101] Later on, al-Sūsī's name is also attested in another three Andalusi med-

99. Al-Sūsī's excerpt deals with a powder medicament which stops bleeding after circumcision and is included in the chapter devoted to sternutatories, vapours, gargling, inhalations, powders, and warm drugs under the heading *Ḏikr al-tadbīr wa-l-ḍarūrāt allatī ḍakara-hā Abū Muḥammad b. al-Sūsī fī risālah fī taṭhīr al-ṣibyān*. It must be remarked that al-Zahrāwī also includes in this chapter excerpts from two other little known Andalusi physicians, al-Ḥasan b. Muḥammad al-Kattānī and Aḥmad b. Yūnus al-Ḥarrānī. Cf. M. A. al-Khaṭṭābī, *Al-Aghdhiya wa-l-adwiya ʿinda muʾallifī al-gharb al-Islāmī*, pp. 271-272. For a biography of al-Zahrāwī, see E. Savage-Smith, «al-Zahrāwī, Abū ʿl-Ḳāsim», *EI2*, vol. 11, 398-399; Eloísa Llavero Ruiz, «Al-Zahrāwī, Abū l-Qāsim», *Biblioteca de al-Andalus*, vol. 7, pp. 684-708; and Cristina Álvarez Millán, «Al-Zahrāwī, Abū l-Qāsim Khalaf ibn al-ʿAbbās», in T. Glick, F. Wallis, S. Livesey (eds.), *Medieval Science, Technology and Medicine: An Encyclopaedia*. London and New York: Routledge, 2005, pp. 526-528.

100. Ibn Wāfid, *Kitāb al-Wisād fī l-ṭibb. Libro de la Almohada, sobre medicina*. Versión árabe, traducción y estudio por Camilo Álvarez de Morales y Ruiz Matas. Toledo: Diputación Provincial, 2006, entry III-99, p. 77 (transl.), pp. 64-65 (Arabic text).

101. Ibn Wāfid, *Kitāb al-Wisād fī l-ṭibb*, entry xv-12, p. 176 (transl.) and 195 (Arabic text).

ical texts composed in the kingdom of Granada during the fourteenth-century.[102] The surgeon and pharmacologist Muḥammad al-Shafrah (d. 1360) included in his work al-Sūsī's formula for an ointment (*marham*) which the latter praised and considered comparable to palm tree salve (*marham al-nakhlī*), a well-known standard compound drug.[103] Another Andalusi medical practitioner and writer who referred to al-Sūsī was Muḥammad al-Shaqūrī (d. after 1369), better known as one of the three scholars from the Nasrid kingdom of Granada who wrote a medical treatise on the Black Death.[104] This author refers to one of al-Sūsī's treatments concerning diarrhoea (*ishāl*) in his *Tuḥfat al-mutawassil wa-rāḥat al-muta'ammil*, a work written on account of the illness of a judge from Granada.[105] Finally, a reference to another tested remedy (*min tajārib al-Sūsī*) is also found in the *Kitāb ʿAmal man ṭabba li-man ḥabba* by the polymath and medical writer Ibn al-Khaṭīb (d. 1374), written during his exile in North Africa and dedicated to the Marinid sultan Abū Sālim Ibrāhīm (g. 1359-1361) with the intention to impress him with his medical erudition.[106]

102. The Nasrid kingdom of Granada was the last bastion of Muslim dominion in the Iberian Peninsula from around 1232 until its conquest by the Catholic Monarchs Isabel and Fernando in 1492. Geographically, it encompassed a relatively large territory in the south and the southeast of Spain (the current provinces of Granada, Almería and Málaga, as well as parts of Cádiz, Jaén, and Murcia), which would be progressively conquered by the Crown of Castille. For a description of the Andalusi medical *milieu* and literary production in this period, see Julio Samsó, *Las Ciencias de los Antiguos en al-Andalus*. 2nd ed. with *addenda* y *corrigenda* a cargo de J. Samsó y M. Forcada. Almería: Fundación Ibn Ṭufayl, 2011, pp. 427-430 and 433-442.

103. Abū ʿAbd Allāh Muḥammad b. ʿAlī b. Faraŷ al-Qirbilyānī, conocido por al-Šafra, *Kitāb al-Istiqṣā' (Libro de la indagación exhaustiva)*. Ed. y traducción de Eloísa Llavero Ruiz. 3 vols. Alicante: Instituto Alicantino de Cultura Juan Gil-Albert, 2005, II, p. 234-235 and III, p. 137 (Arabic text); M. ʿA. al-Khaṭṭābī, *Al-Ṭibb wa-l-aṭibbā' fī l-Andalus*, II, p. 136.

104. Rachel Arié, «Un opuscule grenadin sur la Peste Noire de 1348: la *Naṣīḥa* de Muḥammad al-Šaqūrī», *Boletín de la Asociación Española de Orientalistas*, 3 (1967), pp. 189-199; Suzanne Gigandet, «Trois "*Maqālāt*" sur la prévention des épidémies», *Arabica*, 52.2 (2005), pp. 255-263.

105. This work is devoted to the three types of intestinal fluids according to the organ from which they arise (stomach, liver, and bowels), although this theoretical text also deals with intestinal haemorrhage and haemorrhoids. J. Samsó, *Las Ciencias de los Antiguos en al-Andalus*, pp. 436-437. Al-Shaqūrī's work is partially edited in M. ʿA. al-Khaṭṭābī, *Al-Ṭibb wa-l-aṭibbā' fī l-Andalus*, II, pp. 245-285 (reference to al-Sūsī in p. 277).

106. Ibn al-Jaṭīb, *Kitāb ʿAmal man ṭabba li-man ḥabba*, ed. C. Vázquez de Benito. Salamanca: Universidad de Salamanca, 1972, p. 247. According to the study and list of sources cited in this medical work (p. xxvii), al-Sūsī would have been mentioned three times.

None of these transmitted remedies appears to be recorded in the medical recipe book under discussion in this essay, a late seventeenth or eighteenth century manuscript copy preserved at Morocco's Royal Library. The description of its contents must start with its unusual use of the term *tajārib* (plural form of *tajribah*) in the title, for other Andalusi works on the same topic attested so far (and described below) carry the word *mujarrabāt*.[107] Moreover, the word *tajribah* (tested remedy, remedy proved effective) or *ṣifat tajribah* (recipe of a tested remedy) virtually always opens each treatment, a matter to which I will return later. With regard to the contents, recipes are ordered following the usual structure from head to foot. The information is then organized in a somewhat loose manner or randomly jotted down, either as if written in haste or compiled by someone who put together the available material that he was able to collect. In this respect, a remarkable feature is that conditions affecting the head (such as ulcers in the skin, headache, treatments concerning the hair, as well as eye, ear, nose and mouth ailments) occupy the first half of the whole collection (entries 1 to 77 out of 149 in the Arabic edition). Meanwhile, remedies for the throat, lungs, heart, stomach, intestinal complaints, liver, spleen, kidneys, bladder, sexual organs, anus, pain in the joints, gout and skin conditions are all dealt with in the second half with a proportionally varying number of recipes devoted to each organ and sometimes in a rather disordered manner within each section. Likewise, headings indicating the transition from one body organ to another move from the formal introduction «*al-qawl fī*» over the first folios to the wording «*tajārīb* concerning such and such» until the end of the text. Moreover, as mentioned by Kaddouri, some recipes are misplaced, as is clearly the case of number 71 (intended for the knee and placed amongst recipes to treat the gum or the teeth), and number 80 devoted to a burning sensation when urinating and urine incontinence found at the beginning of treatments for cough and lung conditions. However, in other instances, some rec-

107. Moreover, the actual wording consistently employed throughout the manuscript is *tajārīb*, which may respond to a dialectal form. It is also attested in other words within the manuscript such as *mafāṣīl* instead of *mafāṣil* (joints, articulations) in the entries 145 and 146 of the Arabic edition, although it has been corrected in the text and reflected in the footnote. Although it is beyond the scope of this essay to ascertain whether this plural structure corresponds to the Andalusi dialect, nevertheless, the restrictions imposed by the Covid-19 pandemic made impossible to consult the works by Federico Corriente Córdoba, *A Descriptive and Comparative Grammar of Andalusi Arabic*. Edited by Institute of Islamic Studies of the University of Zaragoza. Leiden, Boston: Brill, 2013; and *A Dictionary of Andalusi Arabic*. Leiden-New York- Köln: Brill, 1997.

ipes are said to be useful for several — and, sometimes, somewhat disparate — ailments, such as number 8 (to relieve pain in the head, the ear and haemorrhoids), number 70 (for whatever affects the head, headache, [pain in] the knees, earache and backache), or number 110 (to treat liver obstruction and swelling, but also useful for jaundice and incipient dropsy). In around twenty-five remedies, some reference is made to the humoral cause of the condition or the type of pathology, but otherwise, medical theory is missing and entries consist of the description of formulas explaining the ingredients, their quantity, and the procedure to prepare the remedy. In this regard, while in some instances the medicament's preparation is rather laborious or time-consuming, a curious feature in this collection is that quite a few recipes are said to be an abbreviated version (*mukhtaṣar*) of an original formula presumably much richer in ingredients, but which nevertheless accounts for the same effective result.[108] With regard to earlier medical sources or authorities, the author cites Dioscorides (entry 23) and Galen (entry 28) only once, but he also states to have read the eye remedy he is about to refer to in an unspecified *Kitāb al-ḥayawān* (entry 55).[109]

One of the most noteworthy features in this collection, however, is the straightforwardness with which the author states on three occasions that the remedy was told to him by someone outside of the profession — that is, by lay people who range from a woman (entry 58) to someone called al-Qamṣānī (lit. the shirt maker or seller, entry 65) and the vizier Muḥammad b. ʿAbd Allāh b. Ḥudayr (entry 64).[110] The woman referred to him the treatment that she had devised herself and

108. See, for instance, entries 96, 101, 109, 127, 134, 143 and 149.

109. The main ingredient in this remedy is the plant *katam*, tentatively identified by Dozy as troëne (common privet, *Ligustrum vulgare*). Reinhart Dozy, *Supplement aux dictionnaires arabes*, 2 vols. Beirut: Librairie du Liban, 1968 (repr. of the original ed. Leiden, Brill, 1881), II, p. 452. The present author does not see Kaddouri's criterion for directing the reader to Dozy's dictionary in three instances throughout the text, but nevertheless, since the bibliographic reference of the copy employed by Kaddouri is not provided, it must be pointed out that the quoted pages do not coincide with the edition cited here. As for the *Kitāb al-ḥayawān* alluded to in al-Sūsī's *al-Tajārib al-ṭibbīyah*, it cannot be identified in the absence of authorship attribution, for it may refer to some of Aristotle's works on the topic translated by Ibn al-Biṭrīq as well as to early medieval Islamic works (by Ibn Māsawayh, al-Jāḥiẓ, ...) with the same or a similar title. See Ullmann, *Die Natur- und Geheimwissenschaften im Islam*, pp. 5-43.

110. With regard to the name of this vizier, in the reproduction of the manuscript obtained while consulting materials at the Royal Library in Rabat in 1992, the present author reads Ḥudayd or Ḥadīd, instead of Ḥudayr, but for the time being, it has not been possible to check the necessary

with which she had cured a persistent eye condition (*ṣifat tajribah ukhrà ṣaḥḥat ʿindī akhbarat-nī imraʾat kāna bi-hā fī ʿayni-hā [...] fa-ṣanaʿat hāḍa al-tadbīr fa-baraʾat*). On the one hand, it might sound remarkable that a medieval Islamic physician would listen, validate and record a medical treatment provided by a female informant. In fact, this entry may well attest to the role and recognition of medieval women's domestic practices in general health care. On the other hand, it is likely more revealing of the actual author's social status as a practitioner, for a learned physician would probably never have risked his professional credentials quoting a lay woman as source rather than his own superior academic knowledge or a respected (male) authority. Moreover, in the second instance, the informant was recommended the remedy by a friend when his cousin developed a nasal haemorrhage and, in the third instance, «a person» — someone not specified — recommended to the vizier another treatment for the same condition suffered by his own infant son which no physician had been able to heal. Another way to put it is that, in the absence of clinical cases or prescriptions actually intended for patients treated by the author of this medical recipe book, we find instead the detailed account of those who happened to have benefited from a remedy suggested by a third party.

By far, the most interesting feature of al-Sūsī's *al-Tajārib al-ṭibbīyah* is the assertiveness with which the remedies' effectiveness is claimed and reinforced several times throughout the heading and the recipe with different expressions. Although, as stated already, remedies are usually introduced by the expression *tajribah* (tested or verified remedy) or *ṣifat tajribah* (recipe of a tested remedy), occasionally, the need to reassure that the treatment is effective or that a cure is granted is expressed «remedies proved useful that I have experimented, tested and validated» (entry 92: *tajārīb ikhtabartu-hā jarrabtu-hā ... wa-ṣaḥḥat ʿindī*, the latter, literally meaning "I found correct")». The guaranteed therapeutic effect manifested in

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sources in order to confirm the identification. It must also be pointed out that, amongst other shortcomings, the edition of this Arabic manuscript does not reflect the majority of marginal notes. The indication of the folio referring to the preceding text instead of what comes next (that is, at the end of each edited folio, instead of at the beginning of a new one) raises confusion. Likewise, in addition to some dispersed words — sometimes inadvertently, sometimes deliberately — remarked in bold script or underlined with no reason, the headings in bold typescript do not always correspond to the text actually highlighted in a larger calligraphic size in the manuscript itself. Also, aside from a couple of misprints, footnote 43 contains by mistake the correction made in the text instead of the original word in the manuscript.

the heading is usually complemented by additional statements at the end of the recipe such as «it will cure the condition» (*fa-inna-hu yabraʾa*), «this electuary is tested and experimented» (entry 95: *wa-haḏā al-maʿjūn mujarrab mukhtabar*), «it is utterly useful» (*fa-inna-hu nāfiʿ ghāyah*), «it is marvellous» (*fa-inna-hu ʿajīb*), «it is marvellously useful» (*fa-inna-hu nāfiʿan ʿajīban*), or the pain or ailment «will go, for [this remedy] is blessed, marvellous and tested, so trust it» (entry 134: *fa-inna-hu yaḏhab wa-huwa mubārak ʿajīb mujarrab wa-ṯiq bi-hi*). Alternatively, the author occasionally states not to have ever seen anything more effective than the remedy just described (entry 75), or he indicates that the recipe is amongst the most marvellous tested and certified remedies for a given condition (entry 79: *min ʿajīb mā jurriba la-hu fa-ṣaḥḥa*). Likewise, he may also state to have tested it several times (*jarrabtu-hu mirāran*), suggesting that the recipe was effective every time he employed it or that it always worked. Moreover, while a few treatments are to be administered over a period of several days, in other instances, remedies are said to work quickly or to have an immediate effect (for instance, entries 13, 97, 123, 135 and 136). As a whole, although sometimes recipes end with a religious advocation (*in shāʾa Allāh*, *bi-ḥawl Allāh wa-quwwatihi, bi-iḏni Allāh*...), an overwhelming number of the treatments are presented as very useful and marvellous, that is, 100% effective. Nevertheless, in case the assertion does not suffice, the reader is often addressed with the final statement «trust it» (*wa-ṯiq bi-hi*) as well as «you better believe it» (*fa-aʿlam-hu*), or in one instance «base yourself on it, for it is blessed» (entry 92: *fa-iʿtamad ʿalay-hi fa-inna-hu mubārak*).

Indeed, the use of the first person dominates throughout the recipe collection, mainly through the use of the formulas «I tested, I experimented, I validated it» (*jarrabtu*, *ikhtabartu*, *ṣaḥḥat ʿindī*) and more occasionally with sentences such as «I tried it several times and found it correct» (entry 138: *jarrabtu-hu mirāran fa-wajadtu-hu ṣaḥīḥan*). From time to time, other actions are also described such as prescribing or reading. Yet, curiously enough, in addition to openly reporting remedies transmitted by common folks mentioned above, the author does not claim to have personally conceived the formulation and preparation of the recipes, and to a large extent, one has the impression that this collection contains remedies employed by himself as much as by others, but not necessarily invented by him. In fact, only twice and at the very beginning of the work (entries 8 and 14), the text explicitly attributes to him the conception of the remedy with the expression «by him» (*la-hu*). Also, very often the wording depersonalizes the authorship with clauses such as the recipe «is proved effective», «has been tested», «was verified

by experience» or «validated by practice» (*mujarrab, jurriba, ṣaḥḥa bi-l-tajrīb, ṣaḥḥa bi-hi l-ʿamal*).

From this perspective, this work seems a hodgepodge of universal remedies (i.e., one size fits all) said to have successfully cured different kinds of ailments — that is, a random collection of effective treatments certified by testimonials and, more importantly, not only by the author or by any authoritative learned physician. Furthermore, no recipe is attributed to any authoritative earlier source and no classical standard formula (such as the electuary *hiera picra*, the *diyākhīlūn* salve, palm salve, *tiryāq al-Fārūq* or *al-tiryāq al-kabīr*, Mithridates' *tiryāq*...) is included. On the one hand, the kind of ailments found in al-Sūsī's *al-Tajārib al-ṭibbīyah* suggest the rather ordinary conditions encountered in daily practice (including intestinal worms and several remedies for hiccups), while at the same time terms designating conditions are restricted to common medical vocabulary such as gout or kidney stones.[111] On the other hand, in contrast with other medical recipe books, the type of ingredients employed in this collection involve more or less common plants and minerals, as well as a wide range of animal products which fall in the realm of magical or sympathetic procedures (*khawāṣṣ*), such as pigeon's blood, sheep's dung, goat's shinbone marrow or gallbladder, donkey's urine, scorpion oil, frogs, turtles, or a black red-eyed hen.[112] Added to the peculiar insistence in the tested, experienced and sanctioned reliability of remedies as a way to guarantee its effectiveness, at the expense of a deeper analysis of this work and the pharmacological arsenal it displays, its contents may sound half way between documenting actual medical practice by ordinary physicians and charlatanism. Perhaps, it may otherwise reflect a self-advertising technique necessary at a

111. For instance, amongst the number of remedies for eye ailments, no technical terms such as *ramad* (ophthalmia), *jarab* (trachoma), *damʿah* (excessive lacrimation), *ẓafarah* (pterygium) or *ẓulmah* (dullness of vision) seems to be employed.

112. The main ingredient in entry 141 is *shayb al-ʿajūz*, literally meaning old woman's grey hair, but it is the plant's name for *Usnea barbata*. It is interesting to highlight, however, that the instillation of hot pigeon's blood for earache in entry 39, very much recalls Ibn Juljul's satiric biography of Yaḥyā ibn Isḥāq and the episode where he was summoned by the caliph ʿAbd al-Raḥmān III al-Nāṣir to treat an earache which other physicians had not been able to cure. The remedy was eventually indicated at a Christian monastery by a monk on his way to the caliph's residence. See Cristina Álvarez Millán, «Medical Anecdotes in Ibn Juljul's Biographical Dictionary», *Suhayl. Journal for the History of the Exact and Natural Sciences in Islamic Civilization*, 4 (2004), p. 147.

time of market competitiveness, or it may simply confirm Ibn Juljul's far from idyllic description of tenth-century medicine in al-Andalus.[113]

Other Medical Recipe Books (al-Andalus)

Incidentally — but necessary to make my point — I would like to draw attention to the different types of professionals in the medieval Islamic medical marketplace. Starting from the basic distinction between health providers who performed the intellectual activity of clinical judgement and prescription (learned physicians) on the one side and those who performed manual work (medical practitioners, barbers, bone-setters, druggists, ...) on the other, we may find learned physicians who practiced and wrote medical works (such as al-Rāzī and Ibn Zuhr), philosopher-physicians who mainly wrote highly theoretical medical works (Ibn Sīnā and Ibn Rushd, for example), and more or less learned practitioners who did not write theoretical books or whose written production is lost, and who are unknown to us because they did not become part of the medical and political elite. Yet another group which awaits to be studied is that formed — at least in al-Andalus — by scholars from other disciplines (jurists, theologians...) who wrote medical works, either as part of the cultural framework of the time in which the educated elite was expected to possess universal knowledge or as a thematic versatility required to assert one's credentials. The late Spanish specialist Rosa Kuhne Brabant used to state that simply being a native Arabic speaker or a health care professional today does not enable anyone to write the history of medieval Islamic medicine. In the same vein, in medieval Islam writing a medical work did not necessarily mean that the author was a physician or practiced medicine. This is the case of the prolific

113. See Álvarez Millán, «Medical Anecdotes in Ibn Juljul's Biographical Dictionary», pp. 141-158. This article addresses the authority and informative value as an historiographical source of the biographical dictionary by the scholar from Cordoba, Ibn Juljul (332-ca. 384 / 94-ca. 994). When biographies devoted to his fellow-citizens are analyzed in the context of the whole work as well as in its political and scientific contexts, the resulting picture of tenth-century medical practice in al-Andalus is far from being a respectable or admirable one. Yet, medical anecdotes included in this work have often been the basis for enthusiastic, rather than critical, praise of medicine in al-Andalus. Exploring the possible author's agenda shows the need to look at Arabic medical sources with healthy scepticism as well as the need to revisit a number of deep-rooted historical assumptions on medieval Islamic medicine.

polymath Ibn al-Khaṭīb: He wrote medical treatises, but was not a physician.[114] So, with this exception, it does not seem a coincidence that the authors who cited the treatments of Abū Muḥammad al-Sūsī (whoever he was) were actual practicing physicians more than medical theoreticians. Moreover, three of them (Ibn Wāfid, al-Shafrah, and al-Shaqūrī) share the feature of being particularly engaged with botany and pharmacology, and more to the point, of having written works entitled *mujarrabāt* or linked to first-hand medical experience and hands-on therapeutics.

4.2. Ibn Wāfid

Ibn Wāfid (d. 1075) is the author of a work on agriculture, but he is particularly renowned for his pharmacological works.[115] He is also known for having established and being in charge of a botanical garden at the request of the king in the taifa of Toledo, whose capital was his native city. His *Kitāb al-Adwiya al-mufrada* is a book on materia medica or simple drugs which is said to have taken him twenty years to accomplish.[116] This work is divided into two parts. In the first, substances are grouped or classified first by taste, then according to primary qualities and their four degrees, and finally according to their second strength (or high order effect, such as emollient, rarifying, condensing, corruptive, expulsive, attracting, purifying, analgesic, narcotic, purging, emetic, diuretic, opening pores or veins, cleaning the kidneys or breaking stones, or useful for cough, menstruation, semen, etc.). The second part classifies simple drugs in terms of their ability to restore balance, followed by those that are hot and dry in the first degree, or hot and wet, then cold and wet or cold and dry in the first degree, continuing with hot and dry in the second degree, hot and wet in the second degree, etc. As for the contents of entries devoted to each simple drug, it consists of a compilation of information extracted from authorities, mainly Dioscorides and Galen, but also from a number of early Eastern Islamic authors.

114. For his life and works, see J. Lirola, R. Arié, I. Garijo, E. Molina, J.M. Puerta, C. Vázquez de Benito, «Ibn al-Jaṭīb al-Salmānī, Lisān al-Dīn", *Biblioteca de al-Andalus*, vol. 3, pp. 643-698.

115. For Ibn Wāfid's biography, see Camilo Álvarez de Morales and Julia Carabaza, «Ibn Wāfid, Abū l-Muṭarrif», *Biblioteca de al-Andalus*, vol. 5, pp. 565-569.

116. Ibn Wāfid, *Kitāb al-Adwiya al-mufrada*. Ed., transl., notes and glossaries by Luisa Fernanda Aguirre de Cárcer. 2 vols. Madrid: CSIC, 1995.

His *Kitāb al-Wisād fī l-ṭibb* (The Pillow Book on Medicine) already mentioned, has until now been described as a blend of *aqrābāḏīn* and *mujarrabāt*, that is, a collection both of well-known standard compound drugs and local or more personally tested remedies backed up by experience. In terms of the present essay, it can be classified as a medical recipe book. While *Kitāb al-Adwiya al-mufrada* is a formal theoretical treatise on simple drugs, *Kitāb al-Wisād* undoubtedly reflects Ibn Wāfid's daily medical practice. Around 950 remedies are ordered from head to toe, with two sections at the end dealing with conditions caused by thick humours and fevers. Like other texts belonging to the genre, there are no formal divisions into chapters or sections. Each group of remedies is simply preceded by a heading indicating the part of the body or the generic ailment addressed, although the last two sections are devoted to purgatives and to a short collection of — mainly — medicinal preparations such as electuaries (*jawārish*) and syrups. Each remedy's heading states its effect or condition for which it is useful, followed by the substances required and its quantity and the process of preparation, often indicating as well the dose or the manner to be administered. Many recipes also encompass advice regarding the appropriate diet to complement the treatment. However, remedies are for the most part given in a quite brief format, although there are occasional lengthy entries, particularly at the end of the work. The order of remedies is rather unsystematic, to the extent that in some instances, the same remedy can be found more than once. As for the number of recipes devoted to each part of the body, it also is rather variable, but all of them invariably end with the religious expression «if God pleases» (*in shāʾa Allāh*). One of the features that characterizes Ibn Wāfid's collection of recipes is his preference for simple remedies in terms of number of ingredients employed (sometimes, just one) as well as of easy preparation or the use of rather common or affordable substances.

With regard to sources, Ibn Wāfid cites nine, amongst which only Galen, al-Rāzī and Ibn Sīnā are unmistakable, for they are referred to basically by their *kunya*: Abū ʿAlī (that is, Avicenna), Abū Muḥammad al-Sūsī, Abū ʿAbd Allāh, Abū Saʿīd, Abū Zayd, and Ibn al-Ḥaṣṣār. The latter is a contemporary personal informant who told Ibn Wāfid of a remedy made of falcon fat and rose oil useful for pain in the anus and haemorrhoids. With the exception of the Cordoban traditionist and exegete Baqī b. Makhlad (d. 889), the remaining ones were tentatively identified with Abū Muḥammad ʿAbd Allāh b. Muḥammad al-Thaqafī al-Sūsī (d. 1013), the Andalusi physician Abū ʿAbd Allāh Muḥammad b. al-Ḥusayn known as Ibn al-Kattānī (d. 1029), the Eastern physician Abū Saʿīd ʿUbayd Allāh b. Jibrīl

b. Bukhtīshūʿ (d. 1058) and Abū Zayd Ḥunayn ibn Isḥāq (d. 877).[117] Whether or not these correspondences are correct, they are sparsely cited, usually no more than once. The work contains remedies attributed to them and — in all likelihood, given his wide use of classical written sources employed in his work on simple drugs and the oral informant mentioned above — Ibn Wāfid's *Kitāb al-Wisād* seems a deliberately extensive compilation of the remedies he ever encountered from any source whatsoever.[118] Nevertheless, an interesting feature in this work is the way in which the therapeutic use is often indicated through an enumeration of symptoms which suggest the discomforts and clinical signs observed by a physician during a consultation. In other words, many recipes suggest they had been employed by Ibn Wāfid to treat his patients and were included as useful remedies. In that regard, it reminds one of al-Sūsī's *al-Tajārib al-ṭibbīyah*, but otherwise, in Ibn Wāfid's *Kitāb al-Wisād* the statement «*mujarrab*» appears only occasionally sanctioning the remedy's effectiveness, as is also the case with other reassuring expressions such as «it is excellent». Another relevant feature is that, although few in number, some recipes actually are prescriptions for particular patients.[119]

117. With regard to Ibn al-Kattānī, while this Andalusi physician is familiar to many specialists in the field, his medical production has remained, however, unknown. A medical work not mentioned by his biographers, but attributed to him and entitled *Kitāb al-Shajarah*, has been edited and translated into Spanish: Jaime Coullaut Cordero, Concepción Vázquez de Benito, *El «Libro del árbol» de Ibn al-Kattānī. Un tratado médico andalusí*. Salamanca: Universidad de Salamanca, 2017. It is a peculiar manual on therapy regarding dangerous conditions and its second part is devoted to remedies. Unfortunately, the access to a copy of this publication occurred too close to submission as to incorporate it into this essay. For his biography, see S. Sadiq and Jorge Lirola, «Ibn al-Kattānī», *Biblioteca de al-Andalus*, vol. 3, pp. 735-738.

118. On the one hand, for example, in a recipe said to be useful against a burning sensation in the eye (entry III-75), the author adds a second formula stating «I have found the recipe of an eye remedy employed by the people of Wāsiṭ in a book, where its excellence and superb effects is described». On the other, Ibn Wāfid also included several remedies which are notable for their brevity and simplicity, such as «Fermented bread must be chewed and applied on the stye [eyelid's pustule]», «Remedy for ophthalmia: instill chicory water in the eye», or «Recipe for deafness: bend the ear on top of blackberry smoke». Ibn Wāfid, *Kitāb al-Wisād fī l-ṭibb*, entries III-54, III-73, IV-5, pp. 71, 64, 83 (transl.), and pp. 56, 48, 73 (Arabic text).

119. Patients are anonymous and, like the other remedies, the entry is usually introduced by «recipe for», followed by «a man / a woman» and the ailment that affected them. The work requires a more exhaustive analysis within the framework of the medical-literary genre of recipe books proposed in this essay, but the inclusion of actual prescriptions not only responds to its nature as tested

Also, although no manuscript copy seems to have come down to us, Ibn Wāfid is attributed three other minor medical treatises and a fourth text entitled *Kitāb al-Mujarrabāt*. We cannot know its actual contents, but having compiled a vast number of tested remedies in his *Kitāb al-Wisād* as a medical recipe book for public general use, perhaps he decided to jot down his prescriptions in a more personal collection devoted exclusively to his own medical experience.

4.3. Al-Shaqūrī

Muḥammad al-Shaqūrī (d. after 1369) belonged to a family of learned physicians. To judge by the works attributed to him, he doesn't seem to have been a prolific medical author nor to have been interested in composing typical formal works on general medical theory, but rather works of a practical nature and seemingly motivated by personal circumstances. His treatise on plague, *K. Taḥqīq al-naba' 'an amr al-waba'* (which he summarized in the shorter version that has been preserved, *al-Naṣīḥa*) was prompted by the famous medieval pandemic. In addition to what seems a diatribe or polemic text against a highly promoted Jewish physician of Granada (the title would read something like «warning to the Jew so that he does not cross the red line»), al-Shaqūrī's work mentioned above, *Tuḥfat al-mutawassil wa-rāḥat al-muta'ammil,* could well be considered a *consilium* since it was prompted by the illness of a member of Granada's political elite. Samsó has emphasized that this work bears witness to the success that Ibn Sīnā's *Urjūzah fī l-ṭibb* (medical poem) met at the Nasrid kingdom, for in addition to being profusely employed for medical teaching, al-Shaqūrī also devotes the third and last section of the *Tuḥfat al-mutawassil* to a commentary upon the section on the care of aged people (*tadbīr al-shuyūkh*). Yet Samsó also highlighted the fact that this text «oozes practical ex-

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remedies, but also to its practical usefulness regarding conditions perhaps seldom seen in clinical practice or, the opposite, not rarely encountered. Some examples are «Recipe for a man who had louses and nits in his beard», «Recipe for a patient who suffered from forgetfulness due to intense warm weather», «Recipe for a female slave who suffered from vertigo every day when getting up after sleep», «A man fell in love with a woman to the extent that he dedicated all his attention and thoughts to her and even became sleepless», «Recipe for a man whose mule had hit him in the eye». Ibn Wāfid, *Kitāb al-Wisād fī l-ṭibb*, entries I-5, II-15, II-17, III-77, pp. 29, 34, 77 (transl.) and pp. 3, 8, 9, 57 (Arabic text).

perience».[120] And indeed, this text is seasoned with clinical accounts of a didactic nature concerning cases treated by al-Shaqūrī as well as by his grand-father, or what seems more extraordinary, also by the tenth-century eastern physician al-Rāzī.[121] H. P. J. Rénaud accurately noticed that al-Shaqūrī «has not an encyclopaedic spirit» or the facility for pedantic intellectualizing which characterizes so many of his countrymen's writings.[122] This is not only evident in the *Tuḥfat al-mutawassil*, but also in his medical recipe book preserved under the title *Maqālah fī ṭibb aw mujarrabāt al-Shaqūrī*, characterized by the simplicity of its contents, brevity and straightforward information as well as a dynamic rhythm which remarks its practical usefulness.[123] This short and basic text is said to respond to the request of some of Granada's dignities and it certainly sounds either written quickly or purposefully conceived to be of use to any literate person. The information is ordered from head to toe and starts with the enumeration of the main (or most common) illnesses which may affect each part of the body.[124] Then, one or two recommended treatments for each of the conditions is concisely addressed. The information may also be structured according to basic parameters of a given illness classification, advocating a remedy for its warm type followed by the treatment when it is cold, or otherwise, specifying a different treatment if the condition is due to some kind of plethora in a particular organ, or responds to a particular humoral cause (*ṣafrāwī, balghamī, sawdāwī*...). For the most part, treatments are very basic remedies and only one or two are given, such as «pine kernel mac-

120. Samsó, *Las Ciencias de los Antiguos en al-Andalus*, pp. 433-437. For a comprehensive view of his life and works, see [s.n.], «Al-Šaqūrī, Abū ʿAbd Allāh», *Biblioteca de al-Andalus*, vol. 7, pp. 302-305.

121. Some of them are included in the first and detailed description of al-Shaqūrī's *Tuḥfat al-mutawassil wa-rāḥat al-mutaʿammil* by H.P.J. Rénaud, «Un médecin du royaume de Grenade: Muḥammad aš-Šaqūrī», pp. 31-60.

122. H.P.J. Rénaud, «Un médecin du royaume de Grenade: Muḥammad aš-Šaqūrī», p. 63.

123. This work is briefly described by Rénaud in pp. 60-64. The Arabic text was edited by M.ʿA. al-Khaṭṭābī, *Al-Aghdhiya wa-l-adwiya ʿinda muʾallafī al-gharb al-Islāmī,* pp. 421-462.

124. Interestingly, as noticed by H.P.J. Rénaud, al-Shaqūrī explains the definition of some medical terms for conditions which lend themselves to confusion in his time as much as now, such as *sirsām* and *birsām* or *saḥj* (here *suḥūj*) and *zaḥīr*, which he differentiates according to the organ in which the illness originates or the kind of tissue lesion it causes (such as abrasion or swelling) respectively. Cf. M.ʿA. al-Khaṭṭābī, *Al-Aghdhiya wa-l-adwiya ʿinda muʾallifī al-gharb al-Islāmī*, p. 429, 433 and 436; Rénaud, «Un médecin du royaume de Grenade: Muḥammad aš-Šaqūrī», pp. 49 and 61.

erated in vinegar anointed with sweet almond» and smelling rose water (as well as making vapour inhalations with it or applying it to the head) to stop nose bleeding. Yet, in addition to simple drugs, therapies in some conditions encompass a compound medicament (*shirāb, maʿjūn, jāwārishāt, tiryāq, hiera picra,...*) and whenever al-Shaqūrī considers it convenient to provide the formula, the weight of each ingredient and its preparation is explained. If he alludes to a generic kind of remedy to be used such as an analgesic or astringent, a list of given plant names follows by way of examples, but more importantly, for certain conditions — either as a complement or as the best treatment — he also advocates manual procedures such as bloodletting, cupping, cautery, an enema, some kind of diet, and a variant of cautery (*al-kayy al-baʿrī*) which resembles the use of *moxas* (moxibustion) in traditional Chinese medicine.[125] The latter procedure might have been appreciated in al-Andalus, for a similar procedure (applying the halves of a warm boiled egg on the inner side of the elbows to stop diarrhoea) is attested in Ibn Wāfid's recipe book.[126] A curious feature, however, is the author's frequent allusion to the specific property of some drugs, usually named in learned treatises as *khawāṣṣ* but here designated as *sirr* (secret), *sirr ʿajīb* (marvellous secret) and *al-asrār al-maktūmah* (the occult secrets). As a whole, this work does not only contain al-Shaqūrī's tested remedies, but also treatments proved effective by earlier physicians or simply accepted by long-standing practice throughout time. As a matter of fact, Galen, al-Rāzī and Ibn Ḥabīb (d.853) are occasionally mentioned, and vague

125. Moxibustion is a procedure of traditional Chinese medicine similar to acupuncture, although instead of using needles, heating is applied by approaching to the skin surface a firmly pressed and thin, cylindrically shaped substance. At the end of the book (when dealing with tested remedies for pain in the back, the knee and the nerves), al-Shaqūrī alluded that the ancients mentioned *al-kayy al-baʿrī*, applying cautery using dung instead of a heated metal instrument or a caustic substance. Immediately afterwards, he included his medical experience with this procedure on a patient, stating that he ordered dried dung to be brought and made it burn (*wa-ashʿaltu-hu nāran*). According to Rénaud, the technique would consist of applying a flaming or scorching substance without allowing the skin surface to get burnt. M.ʿA. al-Khaṭṭābī, *Al-Aghdhiya wa-l-adwiya ʿinda muʿallifī al-gharb al-Islāmī*, p. 438; Rénaud, «Un médecin du royaume de Grenade: Muḥammad aš-Šaqūrī», pp. 62-63.

126. Ibn Wāfid, *Kitāb al-Wisād fī l-ṭibb*, entry XIII-13, p. 151 (transl.) and p. 162 (Arabic text). On cautery, see Cristina Álvarez Millán, «Cautery», in Kate Fleet, Gudrun Krämer, Denis Matringe, John Nawas, and Everett Rowson (eds.), *The Encyclopaedia of Islam* Three. Leiden: Brill, 2018.

references are made to «the ancients» and «the physicians».[127] Interestingly, only two clinical accounts are found in this collection of tested recipes, and they seem case reports triggered not so much by the practitioner's pride for a successful cure, but by its didactic usefulness regarding unusual conditions, severe cases or clinically misleading presentations of known illnesses. Moreover, a rather unusual feature in al-Shaqūrī is his professional humility, for in contrast to the assertiveness, starring role or literary elaboration found in other authors, he sticks to the majestic plural such as «amongst what we have tried» (*mimmā jarrabnā-hu*) or «for [this simple drug] we have a tested remedy» (*wa-lanā fī-hi tajriba*), as well as the passive form «what has been tried» (*mimmā jurriba*). Last but not least, it is a common belief that treatments in medieval medicine — Islamic or Christian — were individualized according to the patient's particular needs or the organ's specific humoral imbalance, often at the mercy of external factors designated the so-called «six non-natural things». Nevertheless, al-Shaqūrī's tested remedies are not conceived for given patients, but — like in the case of al-Sūsī and Ibn Wāfid instances — are presented as universal treatments for given conditions valid for all.

4.4. Muḥammad al-Shafrah

As for Muḥammad al-Shafrah (d. 1360), his surgical treatise *Kitāb al-Istiqṣā' wa-l-ibrām fī 'ilāj al-jirāḥāt wa-l-awrām* is an exhaustive compendium for the treatment of wounds (including dog bites as well as snake and human bites), all types of swellings (boils, gumboils, warts, cysts, fistula, herpes, gangrene...), arrow extraction, broken bones and luxation. However, far from the aseptic formal medical theory, like al-Rāzī (d. *ca*. 925), Ibn Zuhr (Avenzoar, d. 1162), and al-Shaqūrī (d. after 1369), within medieval Islamic medical literature Muḥammad al-Shafrah is also one of a few *rara avis* who openly referred to his medical experience and included case

127. Ibn Ḥabīb was an Andalusi *faqīh*, polimath and author of a work considered to be the first medical treatise written in al-Andalus, with which he introduced knowledge and practices of so-called Prophetic medicine. Ibn Ḥabīb, *Mukhtaṣar fī l-ṭibb (Compendio de medicina)*. Introd., critical edition and transl. by Camilo Álvarez de Morales and Fernando Girón Irueste. Madrid: CSIC, ICMA, 1992. Ibn Ḥabīb also wrote a medical treatise with the unusual title *K. al-Ḥisbah fī l-amrāḍ* which has not come down to us, but was perhaps a collection of prescriptions. For his life and works, see María Arcas Campoy and Dolores Serrano Niza, «Ibn Ḥabīb al-Ilbīrī, 'Abd al-Malik», *Biblioteca de al-Andalus*, vol. 3, pp. 219-227.

histories in his theoretical works.[128] The *Kitāb al-Istiqṣā'* attests the author's vast practical experience and contains a number of clinical accounts which — as noted by Samsó — «in spite of his nickname (*al-shafrah* is the barber's razor), he is not always in favour of surgical intervention, but he often opts to let nature work aiding it as possible [...] The work as a whole reveals not so much a learned medical theoretician, but rather an excellent surgeon with a large experience in a specific medical specialty: orthopaedics».[129] However, it is known that he started as a plant collector and herbalist, was fond of botany and composed a treatise on this topic that has not come down to us.[130] All we can know about his botanical and pharmacological skills is found in his surgical book, written at Fez (present Morocco) after 1341.

His *Kitāb al-Istiqṣā'* is divided into three parts. The last one is devoted to simple and compound drugs in two separate sections, which either together or individually fall in the realm of medical recipe books. According to the scientific framework and historical interests of the time nearly a century ago, H.P.J. Rénaud considered this part of the work to be of little value (literally «mediocre») on account of the fact that it didn't follow the classical pattern, for al-Shafrah does not mention the therapeutic properties of simple drugs or, more precisely, these are only occasionally provided.[131] Indeed, in contrast with the formal structure of theoretical pharmacological works (usually addressing in the first place the primary qualities, the plant's description, its uses, name in other languages and so on in a systematic order), al-Shafrah exclusively focuses on universal remedies for the conditions he has previously dealt with. Thus, the first part on simple drugs is not a text on *materia medica*, but an enumeration of individual substances associated with particular healing effects and how to use them, either mentioning the particular illness for which it is effective (wet ulcers, gangrenous wounds, varying kinds of tumours, different dermatological pathologies, etc.) or stating the high order effect of the medicament (soften-

128. On al-Shafrah's clinical accounts, see Álvarez Millán, «The Clinical Account in Medieval Islamic Medical Literature: *Tajārib* and *Mujarrabāt* as Source», pp. 203-205.

129. Samsó, *Las Ciencias de los Antiguos en al-Andalus*, p. 438. This surgical treatise was also described for the first time by H.P.J. Rénaud, who provides a detailed account of the conditions addressed and case histories in «Un chirurgien musulman du royaume de Grenade: Muḥammad aš-Šafra», *Hesperis*, 20 (1935), pp. 1-20, and «Note complémentaire», *Hesperis*, 27 (1940), pp. 97-98. For a biography of this author and a description of his work, see Eloísa Llavero Ruiz, «Al-Šafra, Muḥammad», *Biblioteca de al-Andalus*, vol. 7, pp. 240-250.

130. Samsó, *Las Ciencias de los Antiguos en al-Andalus*, p. 429.

131. Rénaud, «Un chirurgien musulman du royaume de Grenade: Muḥammad aš-Šafra", p. 19.

ing, drying, cleansing, emollient, corrosive...). Moreover, whether vegetal, animal or mineral, each substance is generally followed by instructions regarding its combination with another simple drug or drugs, actually not just stating how to employ it, but describing the preparation of recipes. For the most part, remedies are to be used externally, and although very few substances are mixed together (honey, wax, olive oil, animal fat, etc. often serving as excipient), this section constitutes a collection of easy compound drugs and remedies backed up by his own experience, even if personal allusions are found only twice.

Likewise, the second section concerned with compound drugs is a collection of formulas (mainly for poultices and salves) encompassing both well-known remedies supported by authority or long-lasting use, as well as more or less complex recipes which undoubtedly respond to al-Shafrah's own harvest: all in all, as explicitly stated at the end of the previous section, all the compound drugs he includes are confirmed by experience (*allatī ṣaḥḥat al-tajriba fī-hā wa-kaṯura istiʿmālu-hā li-kaṯrati manāfiʿi-hā*).[132] In short, seen from the present perspective of first-hand medical experience or hands-on therapeutics, the third part of the *Kitāb al-Istiqṣā'* constitutes a short but specialized and practical medical recipe book.

As a colophon to this first approach to medieval Islamic medical recipe books, it is too soon to make general conclusions since only Andalusi texts have been analysed here. In that respect, it is necessary to broaden the view with eastern sources as well as with manuscripts preserved in libraries that have not yet been studied and which may well also document domestic recipe books. Nevertheless, in the context of Cifuentes' study of this medical-literary genre in the medieval West, some general considerations can be drawn. All the Andalusi texts analysed in this article are professional medical recipe books and each one presents its own particular characteristics. They all were open to information transmitted orally, and to some extent, also prone to including excerpts from written sources. It remains to be assessed whether al-Sūsī's *al-Tajārib al-ṭibbīyah* was permeated by dialectal speech, a feature unlikely to be present in the writings by Ibn Wāfid, al-Shaqūrī and al-Shafrah since their works belonged to—or aspired to be part of—the elite compositions characterised by the use of the more academic classical Arabic language. Nonetheless, as in the western medical tradition, Andalusi medical recipe books are not an evolution or

132. Al-Šafra, *Kitāb al-Istiqṣā'* (ed. and transl. by E. Llavero Ruiz), vol. II, p. 229, and III, p. 131 (Arabic text); M.ʿA. al-Khaṭṭābī, *Al-Ṭibb wa-l-aṭibbā' fī l-Andalus*, II, p.131.

emulation of therapy manuals, *aqrābāḏīn*, or collections of medical prescriptions by well-known physicians. Moreover, the four Andalusi texts came from medical practitioners that do not fit exactly into the usual model of elite medieval Islamic physicians such as Ibn Sīnā and Ibn Rushd (philosopher-physicians), al-Rāzī (prolific writer and director of two hospitals) or Abū l-ʻAlāʼ Zuhr (who in addition to his erudite book on *khawāṣṣ* and his collection of prescriptions, composed most of his theoretical works as a refutation, enlargement or commentary on well-known eastern medical treatises).

Al-Sūsī's biographical circumstances are unknown to us, but his work rather portrays him as a second rate or ordinary practicing physician. Therefore, like al-Hāshimī, he may well reflect actual medical practice by ordinary physicians. Ibn Wāfid was engaged with pharmacology and botany rather than with writing theoretical medical books. Al-Shaqūrī was engaged with medical practice more than with medical writing. Like him, al-Shafrah was not very prolific either, but more importantly, he was a surgeon. This perspective can be seen as the medieval Islamic parallel of Cifuentes' interpretation of western medical recipe books as products from outside of the university *milieu*. In all likelihood, their medical recipe books were certainly intended as a platform for social and professional promotion. However, even if they might have been originally composed as an aide-mémoire to attend the author's practical needs (i.e., for self-consumption), Andalusi medical recipe books were written for circulation (i.e., publication). The four works analysed here present different characteristics according to the author's personal style, interest, skill as practitioner, and perhaps his social or professional status. Nevertheless, although they may contain some prescriptions, the Andalusi medical recipe books described here are collections of tested remedies to a large extent belonging to the author's personal experience. In this regard, the four works attest that medical theory played a minor role in the practice and that, once a treatment seemed to have been an effective therapy, it was automatically considered a universal remedy or one-size fits all.

Concluding remarks

In the future, we might well come across with texts that may not fit into any particular category, but knowing the characteristics of the main medical-literary genres will aide their classification and contextual study. It is imperative that ascrib-

ing a medieval Islamic medical work to one genre or another depends upon the analysis of its contents and is not based on its title, and it must be done within a macroscopic framework. While the literary classification of some medieval Islamic medical works edited and/or translated into western languages long ago may require a reassessment, the history of the clinical record must be looked at in perspective from Antiquity to the present. Furthermore, it is important to analyse every source in its own right, but also in its literary, social, historical and/or scientific contexts.

As for drug testing, it seems that medieval Islamic medical theoreticians who practiced as physicians (like al-Rāzī, Abū l-ʿAlāʾ Zuhr and his son Avenzoar), as well as practitioners in other different professional categories (such as al-Sūsī and al-Hāshimī), tested their remedies on their patients, even if it consisted of trying cures, of making patient's careful follow-ups like al-Rāzī to assess the effect, and eventually considering that the treatment had worked if the condition improved within a reasonable time. It is likely that medieval learned Islamic physicians labelled their prescriptions and new formulas as a «tested remedy» on account of its apparent effectiveness and of the fact that the patient survived — or using the jargon of biomedical treatment testing nowadays, because «nobody died» as a consequence of the substance's administration.

With regard to the actual effectiveness of medieval medicine and Jacob Stegenga's assertion which opened this essay, medieval learned physicians also attributed a superior status to their rational medical paradigm and considered their treatments more effective than other healing practices like nowadays. The different types of Islamic texts linked to first-hand medical experience and hands-on therapeutics from this time-period — with the exception of al-Sūsī's *al-Tajārib al-ṭibbīyah* — rarely reveal whether the medical intervention actually cured the patient's complaints. For instance, in al-Rāzī's tenth-century collection of nearly nine hundred case records of patients mainly seen in a hospital setting, symptoms and treatments are described, but the outcome is very rarely mentioned. Only in very few instances we know that the treatment did not work because the patient returned or reported that it had already been unsuccessfully tried.[133] Only in a couple of instances are we implicitly informed that the phy-

133. Only once a patient is said to have been cured (actually, in one day) from a swelling in one of his testicles. Al-Rāzī, *Kitāb al-Tajārib*, Istanbul, Topkapi Saray Library, Col. Aḥmed III, MS. 1975, fol. 80b. For patients stating that the prescribed treatment (namely, bloodletting) has already been tried, two examples can be found in fol. 16b and 105b. With regard to the first case, the edited

sician is unable to cure the condition because the words «[the patient] will not last long» were recorded or because the choice prescription seems to be palliative care for a terminal illness.[134] Likewise, the medical prescriptions from the Cairo Genizah studied by Efraim Lev and Leigh Chipman contain treatments for medical problems faced by practitioners when treating patients, but do not tell us whether they worked or not either. And with regard to Abū l-ʿAlāʾ Zuhr's prescriptions for real patients or the tested remedies in the medical recipe books analysed in this essay, we are bound to make an act of faith to believe the reassurances about the actual effectiveness of treatments.

What is clear, on the one hand, is that centuries of empirical observation and practical experience had established the benefits and proper use of remedies as effective agents for cooling, softening, strengthening, and so on, as well as their properties as diuretic, laxative, astringent, emetic, antispasmodic, aphrodisiac, narcotic substances, etc. On the other, although western and Islamic medieval learned medicine responded to a sophisticated rational doctrine quite distinct from magic and superstition,[135] it is fair to assume that physicians could do little against a number of infectious, endemic and surgical conditions or to cure those that even today are lethal without treatment, such as diabetes.

So to what extent was medieval medicine effective? Roger French accurately addressed this question by saying: «[w]e have no way of measuring their clinical

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text does not correspond exactly with the manuscript employed by the present author, for some words are missing. The entry in folio 105b was not found in the Arabic edition. Khālid Ḥarbī, *Kitāb al-Tajārib li-Abū Bakr Muḥammad ibn Zakarīyāʾ al-Rāzī*. Alexandria: Dār al-Thaqāfa al-ʿIlmīyah, 2006, p. 246 and 125.

134. *Ibid*., fol. 32b and 49a, respectively. In the second instance, a soporific electuary (*shabyār*) is prescribed, although in the Arabic edition the word has been transcribed as *khiyār shanbar* (Cassia fistula). One of the few cases in which the outcome is mentioned concerns an old man complaining of pain in the kidney, an intense burning sensation in his penis and reddish urine; seized by dysentery while affected by the above mentioned symptoms, the man passed away ten days later (fol. 77 a). Ḥarbī, *Kitāb al-Tajārib li-Abū Bakr [...] al-Rāzī*, pp. 158, 186, and 236.

135. With regard to the myth of medieval medicine as superstitious and ineffective in the collective imaginary, see Bryon Grigsby, «Medical Misconceptions» and Anne van Arsdall, «Rehabilitating Medieval Medicine», in Stephen J. Harris and Bryon L. Grigsby (eds.), *Misconceptions about the Middle Ages*. New York, London: Routledge, 2008, pp. 142-150 and 135-141 respectively. For a recent and didactic assessment of the topic, see Winston Black, *The Middle Ages. Facts and Fictions*. Santa Barbara, California: ABC-CLIO, 2019, pp. 169-189 (Chapter 9, Medieval Medicine Was Nothing but Superstition).

success [...] Our instinct is to believe that old medicine was less effective than our own, which is so conspicuously scientific. Indeed, from a modern point of view pre-scientific medicine can look ridiculous in its theory and bizarre and disgusting in its remedies... but *how then, did physicians in the past meet the expectations of their society, and so succeed?*»[136]

Perhaps part of the answer to this latter question lays in the same reasons as at present: the persuasive strategies displayed by science to construct its superiority and authority, to inoculate ideas and biases about medical advancement, to shape fashionable bedside manners and a myriad of advertising techniques so as to medicalize society and to counteract criticism, or, in short, what can be described as the aggressiveness or supremacism of science. It is convenient to recall that, since Antiquity, philosophers and scientists emphasized rationalism to construct a distinct and superior professional group. Denigrating other healers' practice as superstitious and complaining in prologues to books of the poor state of medical knowledge in the author's time were two of the earliest persuasive strategies of science to construct its authority and professional identity. Inventing the difference between *episteme* (science) and *techné* (craft) was another one. This is why medieval learned physicians only dealt with medical theory, engaged in writing and public rhetoric, but left manual work (such as surgery and drug preparation) to barbers, cuppers, bonesetters, druggists, etc., who had a very different (read «lower») social and professional standing. Whatever the designation we use (rational, learned, academic or scientific) for this particular professional collective, research over the last fifty years has made clear that, since very early times, medical practitioners were determined to establish a hierarchy in terms of social and professional recognition as well as a monopoly of local marketplaces.[137] Quot-

136. Italics by the present author. Roger French, *Medicine before Science. The Business of Medicine from the Middle Ages to the Enlightenment*, Cambridge: Cambridge University Press, 2003, p. 1.

137. With regard to market monopoly, it has to be highlighted that litigation for medical negligence is not a modern issue either, but on the contrary, its history goes back at least to the Middle Ages. However, it is also interesting to mention that some of the records studied so far from this period show that lawsuits for medical negligence were instigated by local physicians rather than by patients as a means to dissuade foreign practitioners (female healers, Jewish physicians, etc.) from practicing at given cities. On this topic, see Madeleine Pelner Cosman, «Medieval Medical Malpractice: the Dicta and the Dockets», *Bulletin of the New York Academy*, 49.1 (1973), pp. 22-47, and M. H. Green and Daniel Lord Smail, «The Trial of Floreta d'Ays (1403): Jews, Christians, and Obstetrics in Later Medieval Marseille,» *Journal of Medieval History*,34. 2 (June 2008), 185-211. On medieval medical misconduct, see Gwen Seabourne, «Drugs, Deceit and Damage in Thir-

ing Roger French again, «physicians built up their trade into an elaborate professional structure, endowed it with an even more elaborate theory, and contrived to present it with great authority».[138] And, indeed, they not only were very successful throughout time in asserting the central position of science as opposed to superstition or other healing practices: they actually contrived that society interiorized it to such an extent that — at least at present — very few of us question its supremacy at all.

Yet as Winston Black accurately states, it is certainly true that «no one could possibly now say "I wish we could revive medieval medicine!"»[139] Therefore, with regard to the question of how effective it was, perhaps another part of the answer is that it probably worked as much as ours at present, for then as now, to a large extent what is behind many supposed successful treatments is not the logic of the therapy applied but the placebo effect, our expectations, hopes, and biases.[140] Probably, medieval patients had less confidence in the effectiveness of learned medical interventions than we have today, regardless of its availability or unavailability. In rural and small urban settings, it seems clear that premodern societies had recourse to a wider array of healing practices and, more importantly, very much in contrast with our present time, until the nineteenth century the patient-physician relationship seems to have been a contractual one rather than based on unassailable trust.[141] As a whole, as far as the clinical success of medieval medicine —

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teenth-Century Herefordshire: New Perspectives on Medieval Surgery, Sex and the Law», *Social History of Medicine*, 30.2 (2016), pp. 255-276. For a medical lawsuit in medieval Islam, see Luisa F. Aguirre de Cárcer, «Sobre el ejercicio de la medicina en al-Andalus: una fetua de Ibn Sahl», *Anaquel de Estudios Árabes*, 2 (1991), pp. 147-162.

138. French, *Medicine before Science*, p. 1.

139. Black, *The Middle Ages. Facts and Fictions*, p. 169.

140. As far as present medicine is concerned, see Les Irwig, J. Irwig, L. Travena, and M. Sweet, *Smart Health Choices. Making Sense of Health Advice*. London: Hammersmith Press, 2008 (which can be freely downloaded from the internet); David H. Newman, *Hippocrates Shadow. What Doctors Don't Know, Don't Tell You, and How Truth Can Repair the Patient-Doctor Breach*. New York: Scribner, 2008; Sheila and David Rothman, *The Pursuit of Perfection: The Promise and Perils of Medical Enhancement*. New York: Vintage Books, 2003. Daniel Moerman, *Meaning, medicine and the «Placebo Effect»*. Cambridge: CUP, 2002.

141. On this issue, see Gianna Pomata, *Contracting a Cure. Patients, Healers, and the Law in Early Modern Bologna*. Baltimore, London: The John Hopkins University Press, 1998. Sally Wilde, «Truth, Trust, and Confidence in Surgery, 1890-1910: Patient Autonomy, Communication, and Consent», *Bulletin for the History of Medicine*, 83 (2009), pp. 302-330.

East and West — is concerned, perhaps we are bound to agree with medieval nominalist philosophers who reacted against scholasticism in that «all mental conceptions are only convenient ways of ordering sense experience [...] All we know about the world are our perceptions of it»,[142] or as Ann van Arsdall put it, «medieval people accepted the system of medicine and the healers with whom they lived as we do our own now».[143]

142. William Eamon and Gundolf Keil, «Plebs amat empirica: Nicholas of Poland and His Critique of the Medieval Medical Establishment», *Sudhoffs Archiv*, Band 71, Heft 2 (1987), p. 193.

143. Anne van Arsdall, «Rehabilitating Medieval Medicine», p. 139.