
History of Ancient Medicine in Iran

Zakariya Razi The Iranian Physician and Scholar

Touraj Nayernouri MD*

Introduction

According to Biruni,¹ Abu Bakr Mohammad Zakariya Razi (Latin Rhazes) was born in Rayy (an ancient town south of present day Tehran) in the year 865 C.E. (251 A.H.) and died there in 925 C.E. (313 A.H.) or a few years later at the age of 60 or so.

As Biruni mentions in his “Catalogue”, Razi spent his youth as an alchemist but around the age of thirty, due to failing vision, gave up alchemy and started his career as a physician.

There is scant information available regarding Razi’s personal life, but it seems that he played the lute in his youth² and wrote an encyclopedia of music.³

At that time, he was apparently a goldsmith by profession and as Ibn Abi Usaibia recounts in his “Lives of the Physicians” (1245 C.E.) he had come across an old manuscript of “Kitab al-Mansuri fi Tebb” hand written by Razi himself in which he had inscribed the title of the author as “Mohammad Zakariya al Razi al-Seirafi (the goldsmith).⁴

During the period of his life that Razi spent as a goldsmith, he performed a great deal of research as an alchemist and in fact laid the foundations of scientific chemistry having written several books and treatise in the field.

From the age of thirty, when Razi started his medical career, he wrote many books and articles in that field for which, he later became renowned in the world, but his writings on chemistry and philosophy attracted little attention until recently.

There is a difference of opinion between

historians as to where and from whom Razi gained his medical knowledge but both ‘Jamal al-din al Ghefti⁵ and ‘Ibn Abi Usaibia⁴ mention that his teacher was ‘Ali Ibn Rabban Tabari’ which is almost certainly incorrect, as ‘Tabari’ died at 861 C.E. (247 A.H.) while Razi was not born until 865 C.E. (251 A.H.). It is possible, however, that Razi had studied Tabari’s medical texts (such as ‘Ferdows al Hakameh’) and thus he had referred to him as his teacher of medicine.

In the same vein, his teachers in alchemy and philosophy have been recounted as ‘Jabber Ibn Hayyan’ and ‘Abu Zeid Balkhi’, respectively which I shall discuss later in the appropriate sections.

It is uncertain whether Razi acquired his medical knowledge in Rayy or Baghdad but it is well known that he spent at least ten years between 896 (282 A.H.) and 906 C.E. (292 A.H.) during the reign of the Khalif ‘Motazed Abbasi’ in Baghdad and that he was the chief physician of the ‘al-Motazedi’ Hospital.

On his return to Rayy, he was appointed as the chief physician of the hospital there by the ruler of Rayy ‘Amir Abdu Saleh Mansour Ibn Ishagh’.⁵

During this period he formed a close relationship with ‘Amir Mansour’ as his physician and companion and wrote his book ‘Tebb-e Mansouri’ for him as well as the book ‘Tebb-e Rohani’ on his request.

In the year 903 C.E. (295 A.H.) ‘Amir Mansour’ went to the town of Neishapur as the ruler of Khorasan Province and was accompanied by Razi.

It is of interest to note that the historian ‘Nezami Arouzi Samarghandi’⁶ in his book ‘Chahar Maghaleh’ has incorrectly reported this journey as to Fararood (Transoxania) and the name of the ruler as ‘Mansour Ibn Nooh’.

Author’s affiliation: Academy of Medical Sciences of I.R. of Iran, Tehran, Iran.

Corresponding author and reprints: Touraj Nayernouri MD, Academy of Medical Sciences of I.R. of Iran, Tehran, Iran.

Telefax: +98-212-293-8051,

E-mail: tnayernouri@yahoo.com

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Mahmood Najmabadi has written in his 'History of Medicine in Iran'² that Razi was blind and miserable for the last few years of his life and haunted by his opponents such that he was unwilling to undergo surgery for the possible return of his eye-sight and that he tells his student that "supposing you performed surgery and I could once again see this world, yet I feel so disappointed by it that I have no wish to do so".

Razi's writings

Najmabadi⁷ mentions two hundred and seventy-three of Razi's books and treatise in the fields of medicine, pharmacology, alchemy, philosophy, cosmology, and theology which he has extracted from the lists of 'Ibn Nadim',⁸ 'Biruni',¹ al Ghefti,⁵ and 'Ibn Abi Usaibia'.⁴ But unfortunately only a few of those writings are extant today and the rest are only mentioned or referred to in the writings of others.

In this article, I shall refer to only a few of Razi's writings in the fields of medicine, alchemy, and philosophy in order to throw some light on his achievements in the history of scientific thought.

Medicine

Razi's most influential book on medicine is 'al-Hawi' known in Europe as 'The Large Comprehensive' or 'Liber Continens', which was in effect an encyclopedia of medicine composed of more than twenty volumes which, in Razi's life time, was probably in the form of scattered notes and was compiled posthumously by his students into a single complete work. According to Professor Edward Browne in his book 'Arabian Medicine',⁹ there is probably no complete copy of this work extant today and as even 'Ali Ibn Abbas Ahwazi Majoosi' (Haly Abbas as he was known in the West) wrote only fifty years after Razi's death, that he was aware of only two complete copies of 'al-Hawi' existing in his day.

This book was a main medical text taught for several centuries at medical schools in the Islamic East as well as medieval Europe, together with Galen's works and Avicenna's 'Canon of Medicine'.

The significance of 'al-Hawi' is that Razi compiled the medical opinions of his predecessors such as Hippocrates and Galen regarding each disease and their treatments in a systematic fashion and then added his own meticulous clinical observations and experience, correcting the opinions of his predecessors where he found them

to be inaccurate or incomplete.

Razi wrote several books and treatise criticizing and questioning the writings of his predecessors.

In the introduction to his book 'Doubts about Galen' he writes:

"Everyone is aware of the authority and the status of Galen in medical matters and thus some less gifted individuals have been outraged by my criticism of him, but the wise and the sage shall not think less of me for they know that in science and philosophy, imitation is not wisdom but that reason and logic must guide ones thoughts and if Galen was alive today he would have praised me for this writing".

And later in the same introduction he writes that "...In medicine and philosophy blind obedience and surrender to authority is unacceptable and Galen himself had chastised those who attempted to impose their opinions on their students without reason or logic."¹⁰

Of further significance is that Razi changed the classical theoretical medicine into an empirical and experimental one as evidenced by his thirty- three case histories which he describes in 'al-Hawi'. He kept individual files for each patient and made daily notes recording the progress of their disease and their response to the treatments prescribed.⁷

Razi also initiated the 'Residency System' of teaching medical students such that he conducted clinical rounds in the hospital with his students as well as an 'out-patient' clinic.

As 'Ibn Nadim' recounts in his 'al Fihrist'⁸ and is mentioned in Edward Browne's 'Arabian Medicine'⁹ that "...Razi is an elderly man with a large head. When he sits at his place, his students sit below him and further down their students take their place. When a patient arrives he is attended by the first group of students. If they are unable to diagnose and treat him, he attends the higher tier of students until finally Razi gives his pronouncement and discusses the problem...".

A further innovation of Razi was his method of experiment and observation in medical treatment.

An example is from his twentieth volume of 'al-Hawi' where he is describing the medicinal properties of rice. After he describes the opinions of 'Dioscorides', 'Galen', and 'Ibn Massouyeh' he relates his own experience thus "...I tried the effects of rice on a group of people of thin physique with a warm temperament and noticed that it caused an inflammation in their body. One of that group was myself".¹¹

Abdolhamid Nayernouri in his book 'Iran's

Contribution to the World Civilization'¹² writes that "...in fact Razi was probably the first physician who used animal experimentation to test the effects of novel treatments and if they had no untoward effects in the animal he would prescribe them for his patients".

Razi writes that "...as far as I am aware, pure mercury can not be dangerous but causes severe abdominal pains and is excreted unchanged. I gave some mercury to a monkey that I used to keep in my house. The poor animal gritted his teeth and was squeezing his abdomen with his hands..."

After this experiment Razi prescribed pure mercury for several of his patients with 'lower intestinal blockage'.

Amongst Razi's other important works in medicine, apart from 'Tebb-e Mansouri' which was mentioned earlier, there are several which were translated into Latin during the Middle Ages and brought him fame in Europe.

In his book 'al-Judari wa al-Hasbeh' (smallpox and measles) Razi described for the first time the differential diagnosis between smallpox and measles and furthermore he gave a description of chicken pox.

This book was translated into Latin by Valla Venezia in 1498 C.E. and then through the next few centuries into English and French and was later printed in Basel, Gotingen, London, and Paris through at least forty editions.

In a small treatise named 'Resaleh Shamieh' or 'the sense of smelling' which he wrote in response to 'Abu Zeid al Balkhi's request Razi described allergic rhinitis due to smelling roses at spring time.

Arabic Medicine and Razi's fame in Europe

Professor Edward Browne gave a series of lectures at Cambridge University in 1921 which was published as a book entitled 'Arabian Medicine'.⁹ This book was later translated into Farsi by Massoud Rajabnia who changed the title to 'Tebb-e-Islami' or 'Islamic Medicine'.¹³

Edward Browne writes that "I have used the term 'Arab civilization' in preference to 'Islamic civilization' for reasons that I shall give bellow. As Latin was the language of science and culture in Europe during the Middle Ages, so was Arabic the language of science and culture in the Islamic world and thus it must be noted that the terms 'Arab science' or 'Arab medicine' are terms applied only to what was written in Arabic and has no other implications. Most of these scientific

treatise were written by Iranians, Syrians, and Jews and to a lesser extent by Greeks and only an insignificant number of them were actually written by Arabs."

In the Middle Ages when the Europeans came into contact with the Islamic empire, they translated many works of science and philosophy from Arabic into Latin and thus called all the Islamic scholars that had written in Arabic as 'Arabs' whereas they were mostly Iranians.

This practice seems suspiciously strange since no European scholar who wrote in Latin in all of Christendom was ever referred to as a 'Latin' or 'Christian' but were all known by their country of origin.

As Dr. Cyril Elgood mentions in his 'History of Medicine in Iran'³ Razi's 'al-Hawi' ('Liber Continens') was translated into Latin in 1297 C.E. by 'Faraj Ibn Salem' for Charles the king of Anjou and it was later printed several times from 1486 C.E. onwards.

This book and the 'Canon' of Ibn-Sina were taught as the standard medical texts in European medical schools for almost seven centuries.

Professor Edward Browne names four great 'Arab' (or Muslim) and I have added a fifth, physicians who lived during the two centuries (10th – 12th C.E.) which orientalist scholars describe as the 'golden age' of 'Arab' or 'Islamic' medicine.

1. Ali Ibn Rabban Tabari, the author of 'Ferdows al-Hakameh;
2. Mohammad Ibn Zakariya Razi;
3. Abu Sahl Ishag Ibn Yahyay Massihi Gorgani;
4. Ali Ibn Abbas Majoossi Ahwazi (known in the West as 'Haly Abbass'); and
5. Abu Ali al-Hosseini Abdollah Ibn Sina, the author of 'Cannon of Medicine'.

In reality all these physicians were Iranian.

Alchemy and the science of chemistry

Hassanali Sheibani in his introduction to the translation of Razi's 'al Madkhal al-Taalimi'¹⁴ gives a list of twenty-four books and treatise written by Razi on alchemy of which only four books and two chapters from another are extant today.

These four books are: 'al Madkhal al-Taalimi', 'Shavahed, 'Assrar', and 'Seir al-Assrar'.

One of Razi's innovations in chemistry was that he classified matter (Aghaghir) into three groups viz. 'Ajssad' (solids), 'Miah' (liquids); and 'Arvah' (Gases) and subdivided naturally occurring matter into animal, vegetable, and

mineral.

He then described chemical compounds or 'Mavalid' and wrote the techniques for making metal alloys.

As is evident from his books 'Madkhal al Taalimi' and 'Assar' unlike his predecessors who cloaked their alchemical writings in a shroud of mystery and occult practices, Razi expounded his methods in a simple and clear fashion.

He described his alchemy in three sections viz: knowledge of chemical substances; knowledge of instruments; and knowledge of its methods (Tadbir) to achieve specific chemical reactions.

It has been due to the great scholarly efforts of Paul Kraus,¹⁵ J. Ruska,¹⁶ and Hassanali Sheibani,¹⁴ in the midtwentieth century that the chemical theories and practices of Razi have been rediscovered, translated, and publicised.

Hassanali Sheibani writes in his introduction to the book of 'al Madkhal al Taalimi'¹⁴ that by transmutation, Razi meant changing the physical properties of some metals by forming alloys and not necessarily the alchemical dream of transmutating base metals into gold. And he further writes in that same introduction that Razi took that first significant step of changing alchemy from an occult practice into the logical and empirical science of chemistry.

It seems that Razi had studied the alchemical writings of the 'Haranian' and 'Sabeini' without regard that these people were considered as infidels and thus he would be criticized severely for having done so. In fact some scholars believe that Razi pretended that these treatises were in fact written by 'Jabber Ibn Hayyan' in order to escape such accusations and hence it may be for this reason that some believe that 'Jabber' was in fact his teacher in alchemy.

Philosophy and metaphysics

Razi's significance in philosophy was his individual approach to metaphysics, which in contrast to most of his contemporaries, opposed those of Aristotle and thus caused great controversies during his life and for centuries thereafter. His philosophical works have been rediscovered only recently and again through the efforts of Paul Kraus.¹⁵

The essence of his metaphysical thoughts were crystallized in his concept of the five coexisting principles.

These five principles were the Creator, the Soul, Matter, absolute Time, and absolute Space.

Naser Khossrow, an Ismaelieh theologian, reacted to these principles vehemently, writing that "...there can not be a fowler statement as to consider the creator on par with his creation".¹⁷

Regarding the soul, Seyed Hossein Nasr writes that "Razi's theory of the soul, in contrast to other aspects of his philosophy, which have a 'materialistic' tinge, reflects mystical interpretations of the entanglement of the soul in the prison of the body".¹⁸

As for 'Hayoola' or matter, Razi had an original atomistic theory rather different from the atomism of Democritus, asserting that this world of matter has been created out of the mixture of the original eternal atoms and thus producing the five elements of this world.

This concept seems to have arisen from the Zoroastrian belief that 'Minoo', the spiritual world is eternal, whereas 'Geety', the material world, has been created from the preexisting elements of the former.

As opposed to Plato's ideas, Razi believed that the precedence of the spiritual world to that of the material world does not imply the superiority of the former to the latter but that the material world is the product of an 'evolution' from the spirit to this more complex form, and as Razi says "...in the universe nothing new comes forth but from some preexisting thing".

It might be of interest that very similar principles were expounded by Leibniz, including his concept of monads, in the seventeenth century.

Razi distinguished between absolute time, which he developed from the Zervanistic notion of eternal or 'unbound' time (Akarna) and 'limited' time which according to him resulted from '...measuring the movement of stars and the rising and setting of the sun'.

He also distinguished between an absolute unbound space as opposed to a limited one in which the observable universe existed, which is not dissimilar from the Newtonian concept of space.

Such questions as whether the universe is eternal (Ghadim) or has been created (Hades) have occupied philosophers since his time through the middle ages and still continues to vex philosophers as well as cosmologists.

Razi's personality

But what of Razi as a man? What did he think and what ideals did he adhere to?

It might be possible to tease out from between what little the historians have said of him, from his

own writings, and from what his opponents have criticized in him, a sketch of his personality.

What is certain is that he was studious to the extreme.

'Ibn Nadim' in his catalogue 'al Fihrist' quotes 'Mohammad Hassan Varragh' saying that Razi '...was never separated from his books and his writings and whenever I visited him he was always busy reading or writing'.⁸

Razi himself has written in his 'al-Seiratol Falsafiah' that "...my quest for knowledge and my lust for learning has been such that since my youth I have dedicated my life to it and if it happened that I had not read a book or met a scholar I would not rest until I had achieved my goal and my efforts were such that on several subjects I have written up to twenty thousand pages in small script and have dedicated fifteen years of my life to the compilation of 'al-Hawi', and for these reasons my sight has deteriorated and the muscles of my hands have weakened which has prevented me from reading and writing and yet my thirst for knowledge remains unquenched and I have others to read and write for me'.

His kindness to his patients and his generosity to the poor have been documented by several historians including 'Ibn Nadim'.⁸

In medicine he introduced a systematic classification of diseases and their symptoms based on empirical observations and experimentation and he changed alchemy from an occult and superstitious practice into a rational and practical science.

Razi's importance in the history of science is not merely that he discovered alcohol, sulfuric acid and ammonium chloride nor that he described and differentiated measles and smallpox or allergic rhinitis for the first time, but it is of greater significance that he based his scientific opinions on a rational and empirical methodology similar to that which Francis Bacon introduced in European thought in the seventeenth century.

His crusade against prejudice and superstition under the social and historical circumstances of his time is salutary.

He had written three treatises concerning why ignorant and superstitious people seek medical treatment from unqualified practitioners and witches as opposed to trained physicians.

And finally, was Razi belligerent and quarrelsome considering all the books and treatise that he wrote against the opinions of his predecessors and contemporaries or was he merely a rationalist who

believed in the power of reason which forced him to battle against the dark forces of prejudice, superstition and religious dogma which was rife in his world?

As mentioned above he had written several treatise criticizing Galen and Aristotle in certain aspects of their medical and philosophical opinions and he also wrote several books opposing the thoughts of his contemporaries including 'Shahid Ibn al Hossein Balkhi', 'Abu Abdolah Ahmad Ibn Ibrahim Moaddab Motakalem', 'Mohammad Ibn al-Laiss al Rasseli'; and several others.

The only contemporary philosopher who escaped his venom was that same 'Abu Zeid Balkhi', for whom he had written the treatise on his allergy to the smell of roses in spring and from whom he had acquired his Neo-Pythagorean ideas, although philosophically their thoughts were diametrically opposed. It is this same 'Balkhi' who is reported to be Razi's teacher in philosophy.

Razi in his 'al Seriat al Phalsaphia' writes "...and so if what I have said concerning practical philosophy lowers my esteem in the eyes of my opponents and they wish to pursue a different path then I wish that they would show me so that if it be superior to my way I shall adopt it or if I should find faults with it that I may advise them".

"In practical matters I can accept that there may be different and better paths than that which I have chosen and I can concede to my opponents. But what of my scientific thoughts?"

"I beseech those that find my science and philosophy incomplete or offensive that they should advise me and if I find their thought superior I shall admit so and will correct my thoughts and if I find theirs incorrect I will advise them but if otherwise then let them forgive me my way of life, and leave me in peace yet I hope that they may at least accept my science".

Despite all this, Razi was never left in peace and was constantly harassed and hounded by religious extremists and men of much less caliber than he.

And so in conclusion, who was Razi? What did he say? And what did he achieve?

Razi was an Iranian scholar and a liberal thinker from Rayy.

He never accepted irrational thoughts and was constantly battling ignorance and superstition.

He upheld systematic reasoning and logical rationality and innovated empirical and experimental sciences of chemistry and medicine.

His conduct was gentle and kind and his

mentality wise and discerning.

He was a scholar and truly a universal man. Unlike Newton, Razi had no shoulders to stand upon, yet he managed to see further than most of his contemporaries.

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