



ABU RAYHAN AL-BIRUNI'S CONTRIBUTIONS TO THE FIELD OF PHARMACY

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Abstract: *This article explores the significant contributions of the great medieval polymath Abu Rayhan al-Biruni to the field of pharmacy. Special attention is given to his renowned work “Kitab al-Saydana fi al-Tibb”, which serves as a comprehensive pharmaceutical encyclopedia. The article analyzes al-Biruni’s approach to the classification of medicinal substances, their therapeutic properties, and his scientific methodology. Furthermore, the relevance of his legacy to modern pharmaceutical sciences is discussed.*

Keywords: *Abu Rayhan al-Biruni, Kitab al-Saydana, pharmacy, medicinal plants, traditional medicine, pharmaceutical history, natural remedies.*

Main Body

1. Overview of al-Biruni’s Scientific Contributions

Abu Rayhan Muhammad ibn Ahmad al-Biruni (973–1048), born in Khwarazm, was one of the most prominent scholars of the Islamic Golden Age. He made groundbreaking contributions to a wide range of disciplines, including mathematics, astronomy, geography, history, medicine, and pharmacy. With over 150 works, his legacy spans both theoretical and practical sciences, and many of his writings were translated and studied in medieval Europe.

2. Kitab al-Saydana fi al-Tibb – A Pharmaceutical Encyclopedia

One of al-Biruni’s most valuable contributions to pharmaceutical science is his book *Kitab al-Saydana fi al-Tibb* (“The Book of Pharmacy in Medicine”). This monumental work contains:

- Detailed descriptions of more than **800 medicinal substances**;



- Information on their **origin, physical properties, therapeutic effects**, and modes of application;
- Multilingual terminology, listing names in **Arabic, Persian, Greek, Syriac, Sanskrit**, and others, demonstrating his linguistic expertise and respect for diverse medical traditions.

The book combines theoretical insights with practical instructions, making it both a scientific treatise and a practitioner's manual.

3. Scientific Approach and Pharmacological Classification

Al-Biruni adopted a rational and systematic approach to classifying medicinal substances. He divided them according to:

- **Source:** plant-based (flowers, roots, leaves, seeds), mineral (salts, metals), and animal-based (fats, secretions, etc.);
- **Properties:** hot/cold, moist/dry – based on the four-element theory, akin to the works of Galen and Ibn Sina (Avicenna);
- **Effects on the body:** therapeutic actions, dosage, side effects.

This methodology laid the foundation for later developments in pharmacognosy and pharmacodynamics.

4. Practical Guidance and Ethical Considerations

In addition to detailing medicinal substances, al-Biruni addressed the ethical responsibilities of pharmacists. He discussed:

- **Storage and preservation** methods for drugs;
- **Dosage accuracy** and the dangers of misprescription;
- **Professional ethics** of druggists and the importance of hygiene in pharmaceutical practice.

Such insights highlight his foresight in integrating ethics into pharmaceutical education.

5. Relevance of al-Biruni's Work in the Modern Era

Al-Biruni's *Kitab al-Saydana* remains relevant today, especially in the fields of **ethnopharmacology** and **traditional medicine**. His meticulous documentation of herbal remedies and natural substances offers a valuable resource for:



- Developing **new herbal-based pharmaceuticals**;
- Conducting **comparative studies** in historical pharmacopeias;
- Validating traditional remedies through modern scientific methods.

The World Health Organization (WHO) acknowledges the importance of traditional medicine, and al-Biruni's work continues to be referenced in academic studies and research.

Conclusion

Abu Rayhan al-Biruni's legacy in pharmacy is both profound and enduring. His *Kitab al-Saydana* represents one of the earliest and most comprehensive attempts to systematically classify and analyze medicinal substances. By combining theoretical rigor with practical wisdom, al-Biruni paved the way for future developments in pharmaceutical sciences. Today, his work continues to inspire researchers seeking to bridge traditional knowledge with modern medical practices.

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