

In memory of Dr. Azar Andami, an eminent researcher and scholar at the Pasteur Institute of Iran

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Author contributions

ZT and EM conducted the study. ZT wrote the first draft of the manuscript. EM supervised the study and revised the manuscript. Both of the authors read and approved the final draft of the manuscript.

Competing interests

The authors declare no conflicts of interest.

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Abstract

This paper focuses on the remarkable contributions and achievements of Dr. Azar Andami (1926–1984), a renowned physician and specialist at the Pasteur Institute of Iran. Dr. Andami conducted extensive research on infectious diseases, particularly cholera, utilizing her knowledge in medicine, bacteriology, and laboratory sciences. She played a crucial role in the mass production of the cholera vaccine at the Pasteur Institute of Iran and in controlling the spread of communicable diseases both locally and globally. This paper aims to highlight her remarkable works and accomplishments.

Keywords: Pasteur; history; Pasteur institute of Iran; cholera; Iran

Introduction

Established in 1920, the Pasteur Institute of Iran is the oldest medical and health research institution in Iran, dedicated to providing community health. Along with conducting infectious disease research and manufacturing biological products, the institute has played a significant role in preventing and controlling communicable diseases for over a century. Dr. Azar Andami, a physician and specialist in clinical laboratory sciences, was a prominent researcher at the institute and made remarkable contributions during her tenure, including mass production of the cholera vaccine and controlling the spread of communicable diseases. This paper reviews her scientific life and services.

Early life

Dr. Azar Andami was born on December 16, 1926 (Figure 1) in Rasht's Saghrisazan neighborhood. She completed her elementary school at Rasht Women's elementary school, and after receiving her ninth-grade general education degree in Forough High School, she entered Rasht's preparatory school. Andami earned remarkable grades at Educational College (Danesh-sara-ye Moqaddamati) in 1945 and obtained a high school diploma in 1950, then studied medicine at Tehran University in 1952, where she became a graduate in 1958 (Figure 2) [1].

After receiving a medical degree, Dr. Andami started working at the mothers-and-newborns support organization while studying in the specialized course of obstetrics and gynaecology. For about 18 months, she completed additional training courses at the Pasteur Institute of Paris, including microbiology, and passed courses on bacteriology, serological methods, and quality control of cholera vaccine production. She also completed a French language course at the Iran-France Association [2].

In 1974, she received her specialized degree in clinical laboratory sciences from Tehran University (Figure 3).

Andami supported herself financially while studying medicine by working as a teacher at a school in south Tehran. In 1946, she secured a teaching job with the Ministry of Culture, and in 1959, she completed her specialization course in obstetrics and gynaecology.



Figure 1 Dr. Azar Andami (1926–1984)

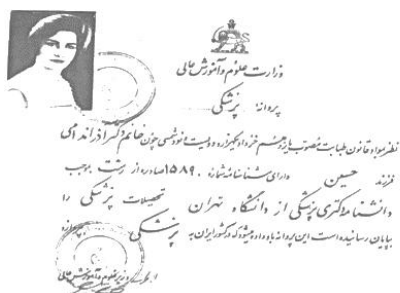


Figure 2 Doctorate degree in medicine from Tehran University, 1958

Working at the Pasteur Institute of Iran

She joined the vaccination department of the Pasteur Institute of Iran as a laboratory technician in 1959. She was later promoted to head of the laboratory for the preparation of microbial vaccines, deputy head of the Microbiology Department, and eventually head of the Cholera and Diphtheria Department.

In 1967, Dr. Azar Andami was appointed as the head of the Laboratory of Microbiology and Production of Microbial Vaccines. Her duties included the protection of standard vaccine strains and their quality control, the preparation of dense solution for microbial vaccines, the preparation of various microbial antigens and the preparation of tuberculin solution.

In 1972, She was appointed as the head of the Department of Vaccination and Preparation of Microbial Vaccines. Her duties included the preparation of biological materials and antigens based on World Health Organization standards, researching various antigenic factors using new methods, standardization of biological materials and microbial antigens in the country, monitoring the standard strains for the vaccines, and remaining in this position until her retirement. One of her most important activities during this period was the production of cholera vaccines and she also headed the project for the production of diphtheria and typhoid vaccines at the Pasteur Institute of Iran.

In addition to her activities in the field of microbial vaccines, she also conducted research on other infectious diseases and published the results of research for the treatment of brucellosis patients in the Middle East Medical Journal [3]. In recognition of her services, she was awarded the fifth-rank medal in 1970.

Dr. Azar Andami retired on October 15, 1978 and then went to Baher Hospital to continue her work, where she headed its laboratory for three years. At the end of her life, she was engaged in the treatment of gynecological and obstetric diseases in the practice of her husband, Dr. Mansour Khalatbari [1].

Missions and training courses

During her tenure, Dr. Azar Andami successfully participated in various training programs at prestigious international institutions. These included the Enterobacteriaceae Antigen study course in Paris (France, 1956), a microbiology course in France and Belgium (1972), (Figure 4) and a program at the Pasteur Institut of Paris focusing on science, epidemiology, and resistance to hospital-acquired infections (1973).

Career highlights

Production of cholera vaccine

At the very beginning of the establishment of the Pasteur Institute of Iran, there were at least 5 cholera outbreaks in Iran. The bacterium causing cholera was carefully studied at the Pasteur Institute of Iran, making the Department of Microbiology and Vaccine of the Pasteur Institute of Iran a large factory that produced cholera vaccines [2].

Between 1963 and 1966, the El Tor cholera prevailed in Iran and many other countries. At that time, the most effective prophylactic method was to inject the cholera vaccine before contracting the disease. As the head of the microbiology laboratory, she led the development of the El Tor cholera vaccine, which was considered the most effective prophylactic method at the time. The vaccine was widely used in Afghanistan, Pakistan, India, Iraq, Georgia, and Azerbaijan, thanks to its success in preventing the acute diarrheal disease caused by human fecal contamination of water and food [4].

During the cholera epidemic in Iran and neighboring eastern countries, about 24 million doses of cholera vaccine were produced within a limited time [5].

By producing this vaccine, the Pasteur Institute of Iran played a very important role in promoting the health and public health of Iranian society and the countries that received this vaccine.

Drinking of drinking water in Tehran

One of the activities of the Pasteur Institute of Iran under the scientific leadership of Dr. Andami at that time was the testing and examination



Figure 3 Degree of Clinical Laboratory Sciences from Tehran University, 1974

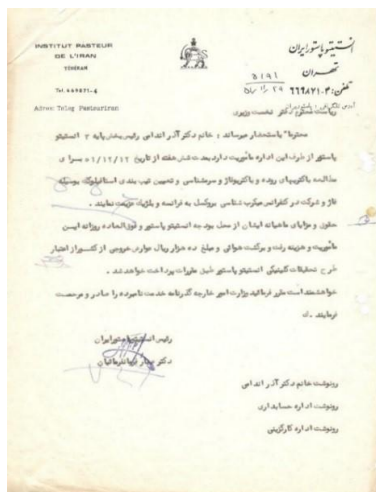


Figure 4 Mission warrant to France and Belgium to study Intestinal bacteria and bacteriophage, to determine staphylococcus typing by phage, 1972

of drinking water and aqueducts in Tehran. First of all, the water of the springs around Tehran was analyzed in the Chemistry Department. When the contamination of the water was confirmed, it was decided to disinfect the water and add chlorine, and the combination of these measures led to controlling cholera and other water-borne epidemics in Tehran [2, 5-7].

The name of Dr. Andami on the Planet Venus

The International Astronomical Union (IAU) is credited with pioneering planetary nomenclature. In 1990, the Magellan exploration satellite mapped 80% of Venus's surface. Subsequently, the IAU named various points on the planet after famous women from around the world, in keeping with the planet's female name. These women were not limited by their place of residence.

In this nomenclature for the holes on the surface of this planet, common female names were selected. Eight years after the death of this lady, the scientific committee of this association registered Dr Azar Andami's name as the first Iranian woman on Venus. In this way, due to the unique services of this Iranian researcher, in 1992, the IAU named a hole with a diameter of 30 km at a longitude of 26 degrees 55 minutes and a latitude of 17 degrees with a central peak in the south of the Venus, Azar Andami [8]. Now the name of Dr. Azar Andami shines on the planet Venus among the most famous women in the world [9, 10].

Honoring Dr. Azar Andami by naming various places after her

Dr. Azar Andami's contributions have been honored through various means. In 2014, a girls' primary school in Rasht was named after her. Additionally, in 2018, the Dilman Gulzar neighborhood of Rasht named a boulevard after her for her valuable services, and her statue was installed at the beginning of the boulevard [11]. Her name is also registered on one of the valleys of the research and production complex of the Pasteur Institute of Iran located in Karaj. Moreover, her name is included in the Arabic textbook of the first intermediate level in Iranian schools.

Family

Dr. Azar Andami was the fourth child and the only daughter of her family. In 1960, She married Dr. Mansour Khalatbari, a forensic medicine expert. She had three children (two girls and one boy). Azar Midokht graduated with a doctorate in geophysics from France, was a writer and reporter for French scientific magazines and is the last to pass away. Mitra is a nurse and an operating room specialist in Paris, and her son Arash, who is the last child studying architectural engineering, is from Paris [1].

Quotes

Dr. Azar Andami said at her retirement party in 1978 at Pasteur Institute of Iran: "Today, I consider this moment to be one of the most glorious moments of my life. Because in my opinion, at this time when the world is trying if a person can complete her thirty years of government service, she will be appreciated by the management and his colleagues. I have had this desire since the beginning of my service, and since I reached my goal, I thank God and feel happy and proud" [12].

One of her colleagues at the Pasteur Institute of Iran, Dr. Mahdokht Pourmansour, says about some of the characteristics of this philanthropic lady: She was a hard-working and strong-willed lady. At the Pasteur Institute of Iran, she never stopped working and researching, and I have never seen a lady with her perseverance and diligence. Dr. Andami was one of the few people that the more I knew, the more I understood that there are many things I don't know, and her constant effort and the dynamism and movement of her life indicate this claim.

Disease and death

This influential and diligent researcher passed away on 28 August 1984 at the age of 58 due to a lung embolism caused by a brain tumor, and her name will remain forever in the history of Iran and on the planet Venus. Her body was buried in Behesht-e Zahra cemetery in Tehran. There is a meaningful epitaph on her tombstone in Behesht Zahra: Her way in this world was on knowledge, love and goodness. Her stead thereby will be in eternal Paradise [13].

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