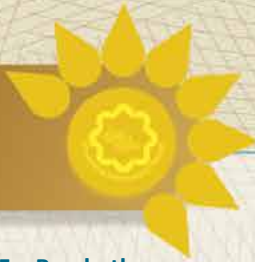


Second Laureate Research & Development



- **Project Title:** Production of I125- Brachytherapy sources used in the treatment of brain tumors and ocular melanoma tumors
- **Researcher:** Shahab Sheibani (Ph.D.)
- **Callaborators Organizations:** Nuclear science and technology research institute- Atomic energy organization of Iran
- **Collaborator:** Hosein Poorbaygi, Mohammad Reza Javanshir



Abstract:

Based on the latest statistics released by the WHO, in 2012 about 85 thousand people in the Iran suffering from cancer and fifty thousands people died due to this disease. It is estimated that by 2030 this figure will double. Based on national comprehensive cancer control program and in order to the quantitative and qualitative improvement of radiotherapy treatment products, including brachytherapy or internal radiation therapy method, this project was defined and implemented, in the atomic energy organization of Iran, in order to developing the above method through achievement of technical knowledge and production of iodine 125- source, which is the world's most widely used brachytherapy source.

In this project different methods for production of source core were investigated and technical knowledge's were achieved (Absorption method on silver wire for low activity and absorption on microspheres for high activity purposes). The loading method of core in the tube and sealed the capsule by using laser welding were investigated and optimum welding parameters were achieved. Methods of source quality control were investigated and control procedures based on standards were established. The dosimetric parameters of produced sources were Evaluated and Compared with parameters of other commercial sources, which have an acceptable agreement. Design and implementation of automated production line, in order to reduce the exposure risk of the personnel, was done.

- During implementation of this project more than 300 sources were produced and used in clinical phases for the treatment of brain tumors (40 patients) and eye melanoma tumors (15 patients) in collaboration with Shohada Tajrish, Tehran and Farabi Eye hospitals. Providing production possibility of new brachytherapy products, for use in new therapeutic purposes, and providing the export opportunity and the possibility of medical services to foreign nationals are other results of this project.

