IRIDIUM-192 SEED DEVELOPMENT FOR OPHTHALMIC CANCER TREATMENT

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Considered a public health problem in Brazil, cancer is the second leading cause of mortality by disease, representing 13.2% of all deaths in the country [1]. Ophthalmic brachytherapy involves inserting an acrylic plate with radioactive material in the eyes of a patient for treatment of ocular tumors. This work is a partnership between Escola Paulista de Medicina - UNIFESP and the Instituto de Pesquisas Energéticas e Nucleares – IPEN for development and implementation of a cheaper therapeutic treatment for ophthalmic cancer with a iridium-192 source, to attend a greater number of patients. Iridium-192 is produced in nuclear reactor. It has a half-life of 74.2 days and decays by beta emission with average energy of 370 keV. [2,3].

The seed will be a platinum-iridium alloy core (80/20), encapsulated in a titanium tube [4]. This project will be divided into the following steps: characterization of materials by FRX (X-ray fluorescence) e EDS (Energy Dispersive Spectroscopy); iridium irradiation in the nuclear reactor IEA-R1; sealing of iridium-192 seed; leakage tests of iridium-192 source in accordance with standard ISO-9978 (radiation protection- Sealed radioactive sources-Leakage test methods) [5]; metallographic tests and measure the activity of the source. The evaluation for use in the ophthalmic treatment of cancer will be made later.

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3 *Norman S (1965) Iridium-192 as a Radium Substitute. Am.J.Roentgenol. Radium Ther. 93: 170-178*
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5 *INTERNATIONAL STANDARD ORGANIZATION. Radiation protection – Sealed radioactive sources – leakage test methods. Feb. 15, 1992. (ISO 9978).*