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166-Ho Quiremspheres for treating unresectable liver tumors

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Quirem Medical BV, a Terumo company, is the manufacturer and supplier of holmium-166 (Ho-166) microspheres. These radioactive microspheres are used for Selective Internal Radiation Therapy (SIRT) which is one of the treatment options for liver tumors. Via placement of a micro-catheter in the liver artery of the patient, the microspheres are injected into the blood stream. These microspheres lodge in the small vessels surrounding the tumor and emit β -radiation to irradiate the tissue. Beside emitting β -radiation, the holmium microspheres have two other unique properties: Ho-166 emits γ -radiation and the material is paramagnetic, allowing to perform SPECT and MR imaging respectively. Based on these imaging methods, the distribution of the Ho-166 microspheres throughout the liver can be accurately assessed. The activation of Ho-166 inside the microspheres is reached by the neutron irradiation in the nuclear research reactors. The microspheres are packed in specific developed irradiation capsules and irradiated up to the requested activity level. The FRM II reactor has demonstrated to be a valuable and constructive partner in the development of this irradiation process to activate the Ho-166 microspheres. The rabbit post pneumatic irradiation facility RPA has been successfully applied for these purposes. Since 2016, FRM II is successfully activating Ho-166 microspheres for patient treatments throughout Europe. We plan to continue our collaboration also after reactor restart 2022.

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