Term Paper update-8

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1 Radiopharmaceuticals for diagnosis in human body

Medical doctors and chemists have identified a large number of chemicals that are absorbed by specific organs. Thyroid, for example, absorbs iodine while the brain absorbs glucose. Diagnostic radiopharmaceuticals can be used to monitor blood flow to the brain, liver, lung, heart, and kidney. Particulate radiation can be useful for destroying or weakening cancer cells (radiotherapy). The radionuclide that generates the radiation can be located in a certain organ in the same way used for diagnostics. In many cases, beta radiation causes the destruction of cancer cells. 177Lutetium (177Lu), for example, is prepared from 176ytterbium (176Yb) which is irradiated to transform it into 177Yb, which rapidly returns to 177Lu. 90Yttrium (90Y) is used to treat cancer, especially non-Hodgkin's lymphoma and liver cancer. 131Iodine (131I), 153samarium (153Sm) and 32phosphorus (32P) are also used in radiotherapy. 131Cesium (131Cs), 103palladium (103Pd) and 223radium (223Ra) are used in special cases.

Figure 1 lists the radionuclides most commonly used for diagnosis and treatment of different organs of the human body.

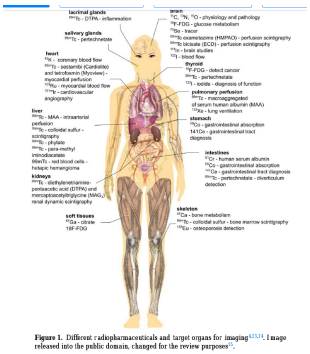

Figure 1. Diffirent radiopharmaceuticals and target organs for imaging[3,13,14]. I mage released into the public domain, changed for the review purposes[15].

Figure 1: Image