

TCS/16/38 – Targeted radiotherapy of prostate cancer in combination with drugs exploiting the aberrant metabolism of tumours.

We intend to refine radiation treatment for prostate cancer which has spread to distant locations throughout the body. Radiation treatment is an important component of the clinical management of prostate cancer which has not spread from the prostate gland. However, there is no cure for prostate cancer which has budded off from the primary tumour and distributed to other sites. To eradicate this aggressive type of disease, we propose to perfect targeted radiotherapy, which uses tumour-seeking drugs attached to radioiodine (^{131}I). After injection, it binds to the cancer regardless of its situation and irradiates cancerous tissue while sparing normal tissue. A radioactive drug, ^{131}I -MIP-1095, has recently demonstrated tumour uptake, anti-tumour effects and pain reduction in prostate cancer patients. Its effectiveness will be improved by combination with drugs (radio-sensitisers) which increase the susceptibility of cancer cells to radiation treatment. These drugs will target the abnormal metabolism of tumours to selectively enhance the killing induced by the radioactive drug. We propose to determine the most effective combinations of radioactive drug and radio-sensitiser.