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Carbon C 11 Metformin

National Cancer Institute

Source

National Cancer Institute. *Carbon C 11 Metformin*. NCI Thesaurus. Code C130014.

A radiopharmaceutical tracer containing the anti-diabetic agent metformin, a biguanide and hydrophilic organic cation, and labeled with carbon 11 (^{11}C), used to measure metformin uptake by cancer cells using positron emission tomography (PET). Upon administration of carbon C 11 metformin, the metformin moiety targets and binds to cancer cells; in turn, the compound is taken up by cancer cells. Upon PET, metformin distribution into cancer cells can be visualized, which allows for a prediction of the anti-cancer efficacy of metformin, based on tumor cell uptake. Metformin transport, such as uptake into cancer cells, appears to be correlated with the expression of organic cation transporters (OCT) 1-3, multidrug and toxin extrusion (MATE) 1 and 2, and plasma membrane monoamine transporter (PMAT). OCTs, MATEs and PMAT play a key role in the distribution and excretion of organic cationic compounds.