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[18F]L-FAC

National Cancer Institute

Source

National Cancer Institute. *[18F]L-FAC*. NCI Thesaurus. Code C92576.

A deoxycytidine analog and high-affinity substrate for deoxycytidine kinase (DCK), labeled with fluorine F 18, with potential diagnostic activity upon positron emission tomography (PET) imaging. [18F]L-FAC is preferentially taken up by and accumulated in cells with high deoxycytidine kinase (DCK) levels, such as in tumor cells with dysregulated nucleoside metabolism. Upon uptake through the nucleoside transporter, [18F]L-FAC is phosphorylated by DCK and, subsequently, the 18F moiety can be visualized upon PET imaging. As many nucleoside analog prodrugs are chemotherapeutic agents that require DCK for activation, [18F]L-FAC can potentially be used as a marker to predict chemotherapeutic efficacy of these prodrugs. In addition, as DCK is upregulated in certain immune cells, such as activated T-cells, [18F]L-FAC can also be used to measure immune activation in response to immunomodulating agents. DCK, a rate-limiting enzyme in the nucleoside salvage pathway for DNA synthesis, is overexpressed in certain solid tumors, lymphoid and myeloid malignancies and certain immune cells, such as proliferating T-lymphocytes.