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# Method Optimisation for [$^{18}$F]-FDG Rodent Imaging Studies

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**Abstract :** [$^{18}$F]-FDG (fluorodeoxyglucose) is a radiopharmaceutical compound that is used for non-invasive cancer tumor imaging through positron emission tomography (PET). This radiopharmaceutical is used to visualise the metabolic processes in tumour tissues, which can be applied for the diagnosis and prognosis of various types of cancer. [$^{18}$F]-FDG has widespread use in both clinical and pre-clinical research settings. Imaging using [$^{18}$F]-FDG results in representative normal tissue distribution as well as visualisation of hypermetabolic lesions ([$^{18}$F]-FDG avid foci). The metabolic tissue concentration of these lesions following [$^{18}$F]-FDG administration can be quantified using Standard Uptake Values (SUV). Standard uptake values of [$^{18}$F]-FDG-based Positron Emission Tomography can be influenced by various biological and technical handling factors. Biological factors that affect [$^{18}$F]-FDG uptake include the blood glucose levels of subjects, normal physiological variants between subjects and administration of certain pharmaceutical agents. Technical factors that can have an effect include the route of radiopharmaceutical or pharmaceutical agents administered and environmental conditions such as ambient temperature and lighting. These factors influencing tracer uptake need to be investigated to improve the robustness of the imaging protocol, which will achieve reproducible image acquisition across various research projects, optimised tumor visualisation and increased data validity and reliability.

**Keywords :** fluorodeoxyglucose, tumour imaging, Rodent, Blood Glucose, PET/CT Imaging
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