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## Molecular Imaging Kits for Hexosamine Biosynthetic Pathway in Oncology.

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### Source

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### Abstract

Noninvasive imaging assessment of tumor cell proliferation could be helpful in the evaluation of tumor growth potential, the degree of malignancy, and could provide an early assessment of treatment response prior to changes in tumor size determined by computed tomography (CT), magnetic resonance imaging (MRI), Positron emission tomography (PET), Single-Photon emission computed tomography (SPECT) or ultrasonography, respectfully. Understanding of tumor proliferative activity, in turn, could aid in the selection of optimal therapy by estimating patient prognosis and selecting the proper management. Positron emission tomography/computed tomography (PET/CT) imaging of 18F-fluoro-2-deoxy-glucose (FDG) is recognized as a technology for diagnosing the presence and extent of several cancer types. Recently, radiolabeled glucosamine analogues were introduced as a promising single-photon emission computed tomography (SPECT) agent to complement FDG imaging to increase specificity and improve the accuracy of lesion size in oncology applications. Radiolabeled glucosamine analogues were developed to localize in the nuclear components of cells primarily via the hexosamine biosynthetic pathway whereas glucose localizes in the cytoplasm of cells through the glycolytic/TCA pathway. This paper reviews novel kit-based radiolabeled glucosamine analogues for metabolic imaging of tumor lesions. The novel radiolabeled glucosamine analogues may increase the specificity in oncology applications and can influence patient diagnosis, planning and monitoring of cancer treatment.

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