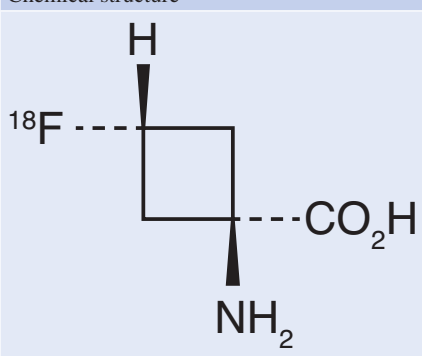


¹⁸F-Fluciclovine (FACBC)

Contents

Route of Synthesis.....	26
Normal Biodistribution and Excretion.....	26
Activity Administered.....	27
Radiation Dosimetry.....	27
Patient Preparation.....	27
Clinical Utility.....	27
Further Reading.....	27

Chemical name and alternative names	Chemical structure
Anti-1-amino-3- ¹⁸ F-fluorocyclobutane-1-carboxylic acid; FACBC; Axumin™ (Blue Earth Diagnostics)	

Route of Synthesis

Nucleophilic attack of ¹⁸F-fluoride on triflate precursor, followed by deprotection with HCl and purification using solid phase extraction cartridges.

Normal Biodistribution and Excretion

Highest initial uptake in liver, bone marrow, and lung. Very little urinary or hepatobiliary excretion (~3% in urine over 4 h) (Sørensen et al. 2013).

Activity Administered

370 MBq.

Radiation Dosimetry

Effective dose equivalent (mSv/MBq): 0.022 (8 mSv/370 MBq).

Organ doses (mGy/MBq): pancreas, 0.10; cardiac wall, 0.05; uterine wall, 0.04 (McParland et al. 2013).

Patient Preparation

Patients should avoid significant exercise for 1 day before imaging. Patients should not eat or drink for 4 h before imaging.

Clinical Utility

Amino acid transport in tumours. Particularly useful in prostate cancer because of lack of urinary activity (Nanni et al. 2016, 2020; Marcus et al. 2020).

Further Reading

- Marcus C, Butler P, Bagrodia A, Cole S, et al. Fluorine-18-labeled fluciclovine PET/CT in primary and biochemical recurrent prostate cancer management. *AJR Am J Roentgenol.* 2020;215:267–76.
- McParland BJ, Wall A, Johansson S, et al. The clinical safety, biodistribution and internal radiation dosimetry of [¹⁸F]fluciclovine in healthy adult volunteers. *Eur J Nucl Med Mol Imaging.* 2013;40:1256–64.
- Nanni C, Zanoni L, Bach-Gansmo T, et al. [¹⁸F]Fluciclovine PET/CT: joint EANM and SNMMI procedure guideline for prostate cancer imaging—version 1.0. *Eur J Nucl Med Mol Imaging.* 2020;47:579–591.
- Nanni C, Zanoni L, Pultrone C, et al. ¹⁸F-FACBC (anti1-amino-3-¹⁸F-fluorocyclobutane-1-carboxylic acid) versus ¹¹C-choline PET/CT in prostate cancer relapse: results of a prospective trial. *Eur J Nucl Med Mol Imaging.* 2016;43:1601–1610.
- Sørensen J, Owenius R, Lax M, et al. Regional distribution and kinetics of [¹⁸F]fluciclovine (anti-¹⁸F]FACBC), a tracer of amino acid transport, in subjects with primary prostate cancer. *Eur J Nucl Med Mol Imaging.* 2013;40:394–402.