

Gadobenic acid

Gadobenic acid (tradename MultiHance) is a complex of [gadolinium](#) with the ligand BOPTA. In the form of the diglumine salt it functions as a gadolinium-based MRI contrast medium, under the trade name gadobenate dimeglumine.

BOPTA is a derivative of DTPA in which one terminal carboxyl group, $-C(O)OH$ is replaced by $-C-O-CH_2C_6H_5$. Thus gadobenic acid is closely related to gadopentetic acid. BOPTA itself was first synthesized in 1995.

In the "gadobenate" ion gadolinium ion is 9-coordinate with BOPTA acting as an 8-coordinating ligand. The ninth position is occupied by a water molecule, which exchanges rapidly with water molecules in the immediate vicinity of the strongly paramagnetic complex, providing a mechanism for MRI contrast enhancement. ^{139}La NMR studies on the diamagnetic $La-BOPTA^{2-}$ complex suggest that the Gd complex maintains in solution the same kind of coordination as found, by X-ray crystallography, in the solid state for Gd-BOPTA disodium salt.

Half the routine contrast agent dose at 7 T provided higher lesion enhancement than the full dose at 3T which indicates the possibility of dose reduction at 7 T ¹⁾.

¹⁾

Noebauer-Huhmann IM, Szomolanyi P, Kronnerwetter C, Widhalm G, Weber M, Nemec S, Juras V, Ladd ME, Prayer D, Trattnig S. Brain tumours at 7T MRI compared to 3T-contrast effect after half and full standard contrast agent dose: initial results. Eur Radiol. 2015 Jan;25(1):106-12. doi: 10.1007/s00330-014-3351-2. Epub 2014 Sep 7. PubMed PMID: 25194707.

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