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Endocannabinoid turnover (version 2019.4) in the IUPHAR/BPS Guide to Pharmacology Database

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Abstract

The principle endocannabinoids are 2-acylglycerol esters, such as 2-arachidonoylglycerol (2-AG), and *N*-acylethanolamines, such as anandamide (*N*-arachidonoylethanolamine, AEA). The glycerol esters and ethanolamides are synthesised and hydrolysed by parallel, independent pathways. Mechanisms for release and re-uptake of endocannabinoids are unclear, although potent and selective inhibitors of facilitated diffusion of endocannabinoids across cell membranes have been developed [19]. FABP5 (Q01469) has been suggested to act as a canonical intracellular endocannabinoid transporter *in vivo* [12]. For the generation of 2-arachidonoylglycerol, the key enzyme involved is diacylglycerol lipase (DAGL), whilst several routes for anandamide synthesis have been described, the best characterized of which involves *N*-acylphosphatidylethanolamine-phospholipase D (NAPE-PLD, [49]). A transacylation enzyme which forms *N*-acylphosphatidylethanolamines has recently been identified as a cytosolic enzyme, *PLA2G4E* (Q3MJ16) [43]. *In vitro* experiments indicate that the endocannabinoids are also substrates for oxidative metabolism *via* cyclooxygenase, lipoxygenase and cytochrome P450 enzyme activities [4, 16, 51].

Contents

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Database links

Endocannabinoid turnover

http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=943

N-Acylethanolamine turnover

http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=273

Enzymes

NAPE-PLD(*N*-Acylphosphatidylethanolamine-phospholipase D)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1398

FAAH(Fatty acid amide hydrolase)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1400

FAAH2(Fatty acid amide hydrolase-2)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1401

NAAA(*N*-Acylethanolamine acid amidase)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1402

2-Acylglycerol ester turnover

http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=944

Enzymes

DAGLα(Diacylglycerol lipase α)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1396

DAGLβ(Diacylglycerol lipase β)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1397

MAGL(Monoacylglycerol lipase)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1399

ABHD6(αβ-Hydrolase 6)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2919

αβ-Hydrolase 12

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3070

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