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Endocannabinoid turnover in GtoPdb v.2023.1

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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 [29]. FABP5 (Q01469) has been suggested to act as a canonical intracellular endocannabinoid transporter *in vivo* [17]. 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, [75]). A transacylation enzyme which forms *N*-acylphosphatidylethanolamines has been identified as a cytosolic enzyme, *PLA2G4E* (Q3MJ16) [66]. *In vitro* experiments indicate that the endocannabinoids are also substrates for oxidative metabolism *via* cyclooxygenase, lipoxygenase and cytochrome P450 enzyme activities [5, 24, 77].

Contents

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Database links

Endocannabinoid turnover
https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=943

N-Acylethanolamine turnover
https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=273
Enzymes
NAPE-PLD(*N*-Acylphosphatidylethanolamine-phospholipase D)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1398
FAAH(Fatty acid amide hydrolase)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1400
FAAH2(Fatty acid amide hydrolase-2)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1401
NAAA(*N*-Acylethanolamine acid amidase)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1402
2-Acylglycerol ester turnover
https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=944
Enzymes
DAGLα(Diacylglycerol lipase α)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1396
DAGLβ(Diacylglycerol lipase β)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1397
MAGL(Monoacylglycerol lipase)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1399
ABHD2(αβ-Hydrolase 2)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3147
ABHD6(αβ-Hydrolase 6)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2919
ABHD12(αβ-Hydrolase 12)
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3070

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