

Endocannabinoid turnover in GtoPdb v.2021.3

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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*-arachidonylethanolamine, 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 [28]. **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, [70]). A transacylation enzyme which forms *N*-acylphosphatidylethanolamines has been identified as a cytosolic enzyme, **PLA2G4E** (Q3MJ16) [62]. *In vitro* experiments indicate that the endocannabinoids are also substrates for oxidative metabolism *via* cyclooxygenase, lipoxygenase and cytochrome P450 enzyme activities [5, 23, 72].

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

DAGL α (Diacylglycerol lipase α)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1396>

DAGL β (Diacylglycerol lipase β)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1397>

MAGL(Monoacylglycerol lipase)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1399>

ABHD2($\alpha\beta$ -Hydrolase 2)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3147>

ABHD6($\alpha\beta$ -Hydrolase 6)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2919>

ABHD12($\alpha\beta$ -Hydrolase 12)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3070>

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