Dopamine Metabolism and Genetic Mutations

1. Phenylalanine hydroxylase (PAH)
2. Tyrosinase (TYR), Tyrosine hydroxylase (TH)
3. AADC (DDC), Copy number = 3
4. DA-β-hydroxylase (DBH), 1 non-synonymous SNV
5. Phenylethanolamine N-methyltransferase (PNMT)

AADC (DDC), Copy number = 3

L-Phenylalanine → Phenylethylamine
L-Tyrosine → Tyramine
L-Dihydroxyphenylalanine → COMT (COMT)
Dopamine → Norepinephrine, Epinephrine

Cyp2D (CYP2D6), Copy number = 1

3-Methoxytyramine → 3-Methoxy-4-hydroxyacetalddehyde

MAO (MAOA, MAOB), Copy number = 1

Homovanillic acid HVA → COMT (COMT)

ALDH (ALDH3A2)

3,4-Dihydroxyphenylacetaldehyde → 3,4-Dihydroxyphenylacetic acid DOPAC

AR (AKR1B1), Copy number = 3

3,4-Dihydroxyphenylethanol DOPEG

ADH

Legend

AADC - Enzyme
(DDC) - Genes coding the enzyme
Dopamine - Metabolite
Copy number = 1 - Mutations

Dopamine-4-O-sulfate
Dopamine-3-O-sulfate
Dopamine-4-O-glucuronide
Dopamine-3-O-glucuronide