

P026 Dopaminergic regulation of adenylyl cyclase activity in rat striatal homogenate

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Dopaminergic receptors in mammalian brain are coupled with G-proteins, which modulate activity of adenylyl cyclase (AC), an enzyme that synthesizes cyclic adenosine-3', 5'-monophosphate (cAMP). There has been found high expression of D1 as well D2 family receptors in rat striatum, but dopamine and D₁-specific agonists caused concentration-dependent accumulation of cAMP in its homogenate, which could be inhibited by D₁-specific antagonists SCH-23390 and SKF-83566 and also by dopaminergic subtype nonspecific antagonist butaclamol, while D₂-specific antagonist sulpiride was without effect. Obtained potencies of agonists to stimulation of cAMP accumulation and potencies of antagonists to inhibit these effects were in agreement with their potencies to inhibit binding of D₁-specific radioligand [³H]SCH-23390 to rat striatal membranes as well as to D₁ receptors expressed in Sf9 cells. However, no D₂-specific modulation of cAMP accumulation could be determined in rat striatal homogenates. D₂-specific agonists quinpirol did not inhibit dopamine-, A_{2A} adenosine receptor agonist- and forskoline activated cAMP accumulation, and D₂-specific antagonist did not modulate basal and dopamine-activated cAMP accumulation. Thus, the used methodology characterizes D₁-specific modulation of AC activity, while methods for characterization of D₂- specific signals in rat striatal homogenate has remained to open.