

Salsolinol and isosalsolinol: Condensation products of acetaldehyde and dopamine. Separation of their enantiomers in the presence of a large excess of dopamine

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Dopamine (DA) condenses, at least in vitro, with acetaldehyde, the primary metabolite of ethanol, to form the regioisomers salsolinol (SAL) and isosalsolinol (isoSAL). An alternative in vivo route to SAL, requiring a decarboxylation step, has been suggested via condensation of DA with pyruvic acid. SAL has been proposed as a mediator of the rewarding effects of ethanol in the brain. We have now shown by HPLC, nuclear magnetic resonance (NMR) and mass spectrometry (MS) that the commercially available SAL contains about 10% of isoSAL, whose biological activity is unknown. If SAL is indeed the biologically active metabolite, rather than isoSAL, it is also unknown whether the rewarding molecule is (S)- or (R)-SAL. We have developed methodologies for the quantitative determination of DA, SAL and isoSAL using ion-pair reversed-phase HPLC, and for the separation of DA from (S)- and (R)-SAL and an isoSAL enantiomer on a β -cyclodextrin-modified column, in both cases with electrochemical detecti