

# Effect of acetaldehyde on dopamine and dopamine-derived salsolinol in the brain of free-moving rats using *in vivo* Reverse Microdialysis Technique

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Our previous microdialysis study showed that dopamine (DA) levels were not significantly altered, in the rat brain, whereas DA -derived salsolinol was found to be detected in rats pre-treated with cyanamide (a potent aldehyde dehydrogenase inhibitor) plus ethanol. In these rats, we found a high accumulation of ethanol and acetaldehyde (ACD) concentrations in blood and brain. Here we focused on the direct perfusion of ACD to see the effect of ACD on dopamine and DA- derived salsolinol levels in the striatum of freely moving rats using an *in vivo* reverse brain microdialysis technique. The detection of DA and salsolinol was performed by high-performance liquid chromatography with an electrochemical detector.

Basal levels of DA was about 1.2 pg/ $\mu$ l. Perfusion with 1000  $\mu$ M ACD decreased DA levels in the dialysate by about 25% at 240 min after perfusion, whereas 500 and 250  $\mu$ M did not result in any significant alteration in the dialysates. Salsolinol was first detected in the dialysates at 30 or 40 min after ACD perfusion, reaching a peak at 150 min, followed by no alterations for 240 min. Each peak level of salsolinol in the perfusion of 250, 500 and 1000  $\mu$ M of ACD was about 0.01 pg/ $\mu$ l, 0.11 pg/ $\mu$ l, and 0.35 pg/ $\mu$ l, respectively.

Our *in vivo* study suggested that high concentrations of ACD led to significant decreases in DA levels, and a dose-dependent elevation of salsolinol was observed in the striatum of freely moving rats.

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