Drug-acetaldehyde interactions during ethanol metabolism in vitro

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Acetaldehyde, at concentrations occurring in vivo was found to avidly react in vitro with several clinically relevant drugs. The greatest reactivity was observed for the hydrazine and hydrazide-containing drugs, hydralazine and isoniazid, respectively. Substantial reactivity was also evidenced for the amine-containing penicillins cyclacillin and ampicillin and for the cephalosporins cephalexin, cephradroxyl and cephradine. However, the virtual lack of reactivity of the amine-containing penicillanic and cephalosporanic acids reveals a major role of the acyl groups of these antibiotics in their reactivity towards acetaldehyde. The presence of moieties which increase the electron density of the amine group appears to favour the molecule reactivity. Amongst several phenylethylamines tested, dopamine and noradrenaline were the most active in forming adducts with acetaldehyde. It is suggested that in vitro binding of acetaldehyde to the above-mentioned drugs could lead in vivo to decreased d