

Acetaldehyde metabolism by brain mitochondria from UChA and UChB rats

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The acetaldehyde (ACh) oxidizing capacity of total brain homogenates from the genetically high-ethanol consumer (UChB) appeared to be greater than that of the low-ethanol consumer (UChA) rats. To gain further information about this strain difference, the activity of aldehyde dehydrogenase (AIDH) in different subcellular fractions of whole brain homogenates from naive UChA and UChB rat strains of both sexes has been studied by measuring the rate of ACh disappearance and by following the reduction of NAD to NADH. The results demonstrated that the higher capacity of brain homogenates from UChB rats to oxidize ACh when compared to UChA ones was because the UChB mitochondrial low K_m AIDH exhibits a much greater affinity for NAD than that of the UChA rats, as evidenced by four- to fivefold differences in the K_m values for NAD. But the dehydrogenases from both strains exhibited a similar maximum rate at saturating NAD concentrations. Because intact brain mitochondria isolated from UChB rats o