

Endogenous methanol: variability in concentration and rate of production. Evidence of a deep compartment?

[Haffner HT](#), [Graw M](#), [Besserer K](#), [Blickle U](#), [Henssge C](#).

Source

Institute of Forensic Medicine, University of Essen, Germany.

Abstract

The endogenous methanol concentration was determined in 72 men aged between 18 and 35 years in the morning after a 12-h period of fasting and abstinence from alcohol. The distribution curve was found to be skewed to the right, the concentrations ranging from '0' (below the detection threshold) to 3.4 mg/kg. The median was 0.1 mg/kg and the mean 0.35 mg/kg. Significant differences were found between three groups defined according to the duration of prior abstinence from alcohol (8 h, 30 h, and 5 days). The highest values were seen after the shortest period of abstinence and the lowest values after the longest period of abstinence. The course followed by the methanol concentration in the presence of blocking of methanol oxidation by orally or parenterally administered ethanol was observed over at least 10 h on two separate occasions in a further 8 subjects aged between 24 and 35 years. At blood ethanol concentrations of more than 0.20 g/kg, the rate of production of methanol, calculated by regression, ranged from 0.09-0.37 mg/kg/h ($r = 0.970-0.554$, $S(y.x) = 0.227-0.565$ mg/kg). The rise in methanol concentration at the start of ethanol administration was significantly more rapid than the subsequent rise. It is hypothesised that there may be a so-called deep compartment for methanol that would explain the dependence of the endogenous methanol level on the duration of the preceding period of abstinence from ethanol, and the occurrence of an initial phase of faster rise in methanol concentration associated with the administration of ethanol.

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