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INFLUENCE OF GILBERT'S SYNDROME ON THE FORMATION OF ETHYL GLUCURONIDE

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Aims: Gilbert's syndrome (GS) is a rather common congenital metabolic aberration with a prevalence of about 5 %. In most cases the syndrome is asymptomatic; possible symptoms to occur are jaundice and fatigue. Gilbert's syndrome is characterized by a disorder of glucuronidation: the enzyme activity of the isoform 1A1 of the uridine diphosphate glucuronosyltransferase (UGT) is decreased by up to 80 %. UGT 1A1 is among those isoforms stated to form ethyl glucuronide (EtG) following exposure to ethanol. EtG is a short-term marker for ethyl alcohol consumption used to proof abstinence in various settings, e. g. in workplace drug testing programs or before liver transplantations. A possible influence of the glucuronidation disorder on the formation of ethyl glucuronide was studied in a drinking experiment with participants diagnosed with Gilbert's syndrome.

Methods: After two days of abstinence from ethanol and giving a void urine sample, 30 test persons drank 0.1 l of sparkling wine (9 g ethanol). 3, 6, 12 and 24 hours after drinking urine samples were collected. Additionally, 3 hours after drinking a blood sample was taken from which liver enzymes, ethanol, hematologic parameters and bilirubin were measured. EtG and EtS, another short-term marker of ethanol consumption, were determined in the urine samples using liquid chromatography-tandem mass spectrometry (LC-MS/MS); creatinine was measured photometrically. EtG- and EtS-values were normalized to a creatinine concentration of 100.

Results: In all test persons, EtG and EtS were detected; as in similar studies the concentrations showed a wide range. No indication for a malfunctioning or altered formation of EtG was gained.

Conclusions: It can be concluded that EtG seems to be a suitable marker for ethanol consumption even in individuals with Gilbert's syndrome.

Keywords: ethyl glucuronide; ethyl sulphate; Gilbert's syndrome; uridine diphosphate glucuronosyltransferase