

Objective Diagnosis of Chronic Alcohol Abuse — Determination of Carbohydrate-Deficient Transferrin (CDT) with Capillary Electrophoresis

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ABSTRACT: To assist the diagnosis of high risk alcohol consumption or alcohol dependence, particularly in the absence of evidences of recent alcohol intake (relapse), objective biochemical markers are today available, which, if used correctly, may reduce the degree of subjectivity that the adoption of merely clinical and psychological diagnostic criteria shows inevitably. The present paper reviews briefly in terms of diagnostic sensitivity and specificity the most important conventional markers of chronic alcohol abuse — e.g., γ -glutamyl transferase (GGT), erythrocyte mean corpuscular volume (MCV), aspartate aminotransferase (AST) and alanine aminotransferase (ALT) — as well as those more recently proposed, namely aldehyde dehydrogenase (ALDH), high density lipoprotein cholesterol, serum triglycerides, urate, fatty acid ethyl and methyl esters, phosphatidylethanol, dolichols, β -hexosaminidase and protein acetaldehyde adducts. However, the specific focus of this review is on carbohydrate-deficient transferrin (CDT), the collective name of a group of transferrin isoforms lacking totally or partly the oligosaccharide chains usually linked at two glycosylation sites in the C domain of the protein. CDT, at present, is considered the most reliable marker of excessive alcohol intake for at least a week, and has a chronological diagnostic window of about two weeks before sample collection. CDT is reviewed in terms of diagnostic value, applications and, particularly, in the different analytical approaches, with special emphasis on capillary electrophoresis, the latest method proposed for its quantitative determination.

KEY WORDS: Alcohol abuse, biochemical markers, carbohydrate deficient transferrin, CDT, capillary electrophoresis
