

Analysis of Enzyme Activity of Alcohol Dehydrogenase and Alcohol Dehydrogenase 3 (ADH3) Gene Polymorphism of Alcoholics and Non-Alcoholics in Indonesia.

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Abstract	<p>ABSTRACT Alcohol is an addictive substance that is often misused worldwide, including in Indonesia. Ninety percent of the alcohol that enters the body will be metabolized in the liver using the alcohol dehydrogenase (ADH) enzyme. It is important to determine the activity of ADH enzyme and ADH3 gene polymorphism on alcoholics and non-alcoholics in Yogyakarta, Indonesia. The aim of the study is to determine ADH activity and identify ADH3 gene polymorphism of alcoholics and non-alcoholics in Yogyakarta, Indonesia. This study was an observational study with a cross-sectional design method. Blood samples were taken from 71 Javanese alcoholics and 71 non-alcoholics of Javanese descent in Yogyakarta, Indonesia. The participants were initially requested to sign an informed consent form. Examination of ADH enzyme activity used the spectrophotometry method and ADH3 gene polymorphism was assessed with PCR-RFLP using Ssp I restriction enzyme. The activity of ADH enzyme in all individuals appeared to be a slower type. The average of the ethanol value of alcoholics and non-alcoholics were 0.05554 mM and 0.0758 mM respectively. Gene type of alcoholics were ADH3*2(75.4%), ADH3*1/3*2(21.5%), and ADH3*1(3.1%), and non-alcoholics were ADH3*2(88.6%), ADH3*1/3*2(10.0%), and ADH3*1(1.4%). There were no significant differences between the activity of ADH with polymorphism of ADH3 gene in either alcoholics and non-alcoholics ($p>0,05$). Conclusion: The activity of ADH enzyme in all participants appeared to be a slower type. Most of the ADH3 gene polymorphism of alcoholics and non-alcoholics were both ADH3*2 (75.4% and 88.6%). There was no differences of ADH enzyme activity with ADH3 gene polymorphism between alcoholics and non-alcoholics of Javanese population in Yogyakarta, Indonesia.</p>
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