



Title	Effect of Gene Polymorphisms and Ethanol Consumption on Micronucleus Frequency in Human Reticulocytes- A Preliminary Study
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Citation	大阪大学, 2010, 博士論文
Version Type	
URL	<a href="https://hdl.handle.net/11094/54232">https://hdl.handle.net/11094/54232</a>
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学 位 記 番 号	第 23607 号
学 位 授 与 年 月 日	平成22年3月23日
学 位 授 与 の 要 件	学位規則第4条第1項該当 医学系研究科予防環境医学専攻
学 位 論 文 名	Effect of Gene Polymorphisms and Ethanol Consumption on Micronucleus Frequency in Human Reticulocytes-A Preliminary Study (遺伝子多型とエタノール消費におけるヒト網状赤血球の小核頻度の影響 -予備研究)
論 文 審 査 委 員	(主査) 教 授 森本 兼義 (副査) 教 授 磯 博康 教 授 的場 梁次

### 論文内容の要旨

#### [目的]

Previous studies suggested that alcohol drinking be genotoxic on peripheral lymphocytes. In the present study, we intend to observe the association of alcohol drinking with the genotoxic effect on hematopoietic stem cells in vivo.

#### [方法ならびに成績]

We investigated 156 healthy Japanese males in a cross-sectional study. Lifestyles including alcohol drinking behavior and cigarette smoking status were investigated with a self-completed questionnaire. Polymorphisms of ADH1B and ALDH2 were identified with polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Micronucleus in the transferrin-positive reticulocytes (MN-RET) was detected with a single-laser flow cytometer. Associations between the genetic polymorphisms, lifestyle factors and MN-RET frequency were statistically analyzed.

We found a significant difference in the mean frequencies of MN-RET between habitual drinkers and non-habitual drinkers ( $P = 0.043$ ), and between the ALDH2 \*1/\*1 and ALDH2 \*2/\*2 genotype ( $P = 0.015$ ). The ADH1B \*2 and ALDH2 \*2 haplotype was estimated to have a significantly higher influence on the MN-RET frequency compared with ADH1B \*2 and ALDH2 \*1 haplotype ( $P = 0.00035$ ), and alcohol drinking frequency played a significant role in the MN-RET frequency on the background of ADH1B \*2 and ALDH2 \*1 haplotype ( $P = 0.012$ ).

#### [総括]

The present study suggested a possible association of ADH1B and ALDH2 polymorphism with genotoxic effects of alcohol drinking on the hematopoietic stem cells.

## 論文審査の結果の要旨

### [ 目 的 ]

Previous studies suggested that alcohol drinking be genotoxic on peripheral lymphocytes. In the present study, we intend to observe the association of alcohol drinking with the genotoxic effect on hematopoietic stem cells *in vivo*.

### [ 方法ならびに成績 ]

We investigated 156 healthy Japanese males in a cross-sectional study. Lifestyles including alcohol drinking behavior and cigarette smoking status were investigated with a self-completed questionnaire. Polymorphisms of ADH1B and ALDH2 were identified with polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Micronucleus in the transferrin-positive reticulocytes (MN-RET) was detected with a single-laser flow cytometer. Associations between the genetic polymorphisms, lifestyle factors and MN-RET frequency were statistically analyzed.

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### [ 総 括 ]

The present study suggested a possible association of ADH1B and ALDH2 polymorphism with genotoxic effects of alcohol drinking on the hematopoietic stem cells.

学位に値するものと認める。