

# The correlation between GSTP1 rs1695、CAT rs769217 and valproate-induced AST elevation in Chinese epilepsy children

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## Abstract

**Aims:** Children are high risk groups of valproate (VPA) mediated hepatotoxicity, and oxidative stress plays an important role in the process. This study aimed to determine the association between key genetic polymorphisms of antioxidant pathway GSTP1 rs1695, PON1 rs662, CAT rs769217 and VPA mediated abnormal AST elevation. **Methods:** A total of 194 eligible children with newly diagnosed epilepsy who aged 1 to 16 years old were selected and treated with valproate. According to the AST abnormalities at the maximum AST during the treatment, the subjects were divided into AST normal group and AST elevation group. SNPscan was used for genotyping. **Results:** In this study, 25.8% of the patients had AST elevation during VPA treatment. The maximum value of AST in patients with AA genotype of GSTP1 rs1695 during VPA monotherapy was significantly higher than that of patients carrying G alleles ( $36.50 \pm 14.89$  vs  $32.88 \pm 10.69$ ,  $P=0.003$ ). The maximum value of AST in CAT rs769217 genotypes were significantly different ( $P=0.011$ ,  $P=0.045$ , respectively). The risk of GSTP1 rs1695 AG+GG genotype of AST elevation was reduced (adjusted OR=0.37, 95% CI:0.16-0.84,  $P=0.017$ ). And the risk of CAT rs769217 CT genotype or CT+TT genotype of AST elevation was reduced (adjusted OR=0.30, 95% CI:0.13-0.68,  $P=0.004$  and adjusted OR=0.41, 95% CI:0.20-0.82,  $P=0.012$ , respectively). **Conclusion:** GSTP1 rs1695 and CAT rs769217 are related to VPA-induced AST abnormalities in children. Carriers of GSTP1 rs1695 G allele have a reduced risk of AST abnormalities. CAT rs769217 CC genotype is a risk factor for abnormal AST.

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The correlation between GSTP1 rs1695\begin{CJK}{UTF8}{gbsn}\end{CJK}\selectlanguage{english}CAT rs769217 available at <https://authorea.com/users/359484/articles/481436-the-correlation-between-gstp1-rs1695-cat-rs769217-and-valproate-induced-ast-elevation-in-chinese-epilepsy-children>

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Table1 Information for key SNPs of antioxidant pathway included studies.doc available at

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Table 2 Demographic data and clinical characteristics of the patients at the time when the AST reached available at <https://authorea.com/users/359484/articles/481436-the-correlation-between-gstp1-rs1695-cat-rs769217-and-valproate-induced-ast-elevation-in-chinese-epilepsy-children>

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Table 3 the distribution of the genotype and allele in patients.doc available at <https://authorea.com/users/359484/articles/481436-the-correlation-between-gstp1-rs1695-cat-rs769217-and-valproate-induced-ast-elevation-in-chinese-epilepsy-children>

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Table 4 the distribution of the genotype in patients with normal or elevated serum AST levels.doc available at <https://authorea.com/users/359484/articles/481436-the-correlation-between-gstp1-rs1695-cat-rs769217-and-valproate-induced-ast-elevation-in-chinese-epilepsy-children>