A simple allele-specific polymerase chain reaction method to detect the Gly143Glu polymorphism in the human carboxylesterase 1 gene: importance of genotyping for pharmacogenetic treatment

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Resumen

Human carboxylesterases 1 and 2 (CES1 and CES2) catalyze the hydrolysis of many exogenous compounds. Alterations in CES sequences could lead to variability in both the inactivation of drugs and the activation of prodrugs. The human CES1 gene encodes for the enzyme carboxylesterase 1, a serine esterase governing both metabolic deactivation and activation of numerous therapeutic agents. Some of theses drugs are the antiviral oseltamivir used to treat some types of influenza infections and the methylphenidate employed in the treatment of patients with attention deficit. The Gly143Glu polymorphism in CES1 gene has been shown to reduce enzyme activity. The aim of the present study was to develop an easy and cheap method to detect this polymorphism. For this, we studied a group of people from Córdoba, a Mediterranean area from Argentina. Our results show that our methodology could detect the presence of this polymorphism with a frequency around 1.8%, only in the heterozygote form. These results could be relevant to patients before the treatment with some drugs where the CES1 enzyme is involved.

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