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MOLECULAR GENETICS OF DRUG-RESISTANCE IN EPILEPSIES

ABSTRACT

Nearly one-third of newly diagnosed patients with epilepsy remain unresponsive to antiepileptic drugs (AEDs), etiopathogenesis of which is poorly understood. The genes encoding the proteins that regulate the pharmacokinetics (such as P-glycoprotein *[ABCBI]*, major vault protein *[MVP gene]* and drug metabolizing enzymes *[ABCB1, ABCG2, MVP, CYP2C9, CYP2C19, CYP3A4, CYP3A5, EPHX1, UGT1A1, UGT2B7]*, and pharmacodynamics (such as sodium channels *[SCN1A, SCN2A]* and GABA receptors *[GABRA1, GABRA6, GABRB2, GABRG2]* of AEDs are under intense investigation to unravel the mysteries of AED-resistance. However, till today, a consistent and reliable result that could help the clinician either to predict drug-resistance or to overcome it has not been forthcoming. The discrepant results may be related to variations in the definition of drug-resistance, heterogeneous patient populations, ethnic variations in the frequency distribution of single nucleotide polymorphisms (SNPs) and the selection of SNPs. Understanding of these limitations of existing studies, hopefully, will help in designing better studies.