



# ABS050

## PHARMACOGENETICS & PHARMACOVIGILANCE- THE LINK

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**BACKGROUND:** The increasing burden of ADRs on the cost of health service and the quality of life has led to an evitable need for strict application of Pharmacovigilance in the recent times. Out of the various tools that can aid the process, one of the most upcoming means is PHARMACOGENETICS.

**HISTORY:** With a history that stretches as far as 510 B.C. when Pythagoras noted potentially fatal reaction of fava beans only on select individuals, the application of pharmacogenetics has come a long way and the recent attention is focused on the potential use of Single Nucleotide Polymorphism (SNPs) to determine the individual drug response.

**CURRENT SCENARIO:** The current scenario shows effective application of the concept of Pharmacogenetics in various fields like: (a) drug therapy where one such example is identification of the genetic defect underlying some patients with neonatal diabetes, (b) drug discovery (c) drug disposition study like effect of *CYP2D6* genotype on the efficacy of tamoxifen for metastatic breast cancer. Also recently there are FDA-approved Drugs, like Abacavir and Amitriptyline, with pharmacogenetic information in their labeling which contain information on genetic biomarker and can describe (a) Drug exposure and clinical response variability (b) Risk for adverse events (c) Genotype-specific dosing (d) Polymorphic drug target and disposition genes. With the immense advantages of pharmacogenetic application on pharmacovigilance, it is an opportunity for a country like India to tap its intellectual resources for improving health care system. It could also help minimize failure rate and reduce economic burden in drug discovery programs. Even those drugs which might have failed in the early stages of clinical trials could be revived to test in different pharmacogenetic background of cell lines, animal models, or human populations.

**LIMITATIONS:** Despite the prospects, this approach for individually targeted drug therapy can be expensive and impact access to drugs, whereas, studies targeting certain groups within population need to be carefully implemented as generalized assumption on genetic variation might not always hold true. With the rapid growth in technology, the future of pharmacogenetics looks bright and affordable and the system of generic drug dealings further strengthen the scope of drug response monitoring based on pharmacogenetic profile of Indian population.

**CONCLUSION:** Pharmacogenetics has clear potential to influence the practice of medicine. The selection of drugs based upon a one-off acquisition of genetic information has the potential to facilitate the selection of the most efficacious drugs at the optimal dose, and avoid many severe adverse effects.

**Keywords:** *Single Nucleotide Polymorphism (SNP), Genetic biomarker, Genes, ADR, Pharmacovigilance, Pharmacogenetics*