Contribution of genetic polymorphism to potential herb drug interactions among the Brazilian population

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The Brazilian Unified Public Health System (SUS) has issued a list of traditional herbal medicines of clinical interest. Plant xenobiotics may cause pharmacokinetic (PK) disturbances (the so called herb-drug interactions) due to the inhibition/induction of cytochrome P450 enzymes. Moreover, according to Brazilian Pharmacogenetics/Pharmacogenomics Network (REFARGEN), the high prevalence of genetic polymorphisms amongst the Brazilian population could also interfere with the detoxification of xenobiotics. The genomic diversity of the Brazilian population is a result of the genetic admixture of three groups: Europeans, Africans and Amerindian. The most prevalent polymorphisms found in Brazil were in the cytochromes 2C9, 2C19, 2D6 and 3A5. Because of that, adjustments of a predefined dosage might be necessary for a medicine to exert a pharmacological effect in the patient. Here we present a review on how the genetic polymorphisms are able to contribute to potential herb-drug interactions. Numerous herbal medicines of clinical interest of SUS have been reported to affect the activity of such metabolic enzymes. For example, on the CYP 2C9 isoform, the CYP2C9*2 and 11 alleles were found in higher frequency in white Brazilians, whereas CYP2C9*3 was mostly found in browns and CYP2C9*5 in the black population. These types of polymorphisms are able to decrease the in vitro activity of CYP2C9. Herbal medicines that also interfere with that cytochrome isoform, such as garlic, eucalyptus, devil’s claw, pomegranate, red clover and ginger could potentially expose the population to the adverse effects of drugs metabolized by this enzyme. In this manner, we aim to apply toxicogenomics to the pharmaceutical safety assessment of herbal medicines.

Biography

Dias Araujo Mazzari Andre Luis is from Brazil. He is currently a PhD student in Pharmacognosy and Natural Products Chemistry at University College London – School of Pharmacy, London – UK. He started his career in a multinational company as a Regulatory Affairs Analyst. Later, he worked for Oswaldo Cruz Foundation (FIOCRUZ), attached to the Brazilian Ministry of Health and the most prominent science and technology health institution in Latin America. He was a recipient of two scholarships: Chevening (UK scholarship) and Science without Borders (Brazilian Scholarship Scheme). He works with herb-drug interactions and has recently published an article in Frontiers in Pharmacology Journal.

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