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Evaluation of a probable regulatory network between CYP1A1, CYP1A2 fragment and AHR on coffee consumption

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Coffee is the most widely consumed beverage worldwide with known health benefits. Besides caffeine, coffee contains a very complex mixture of organic compounds, such as chlorogenic acids, caffeic acid, kahweol, trigonelline, minerals. However, coffee when roasted also produces polycyclic aromatic hydrocarbons, some of them with carcinogenic effects. Caffeine is primarily metabolized by CYP1A2 responsible for approximately 95% of caffeine metabolism. CYP1A2 presents polymorphism that can determine a decrease in the enzyme inducibility. Carriers of variant CYP1A2*1F allele are slow caffeine metabolizers, whereas individuals who are homozygous for CYP1A2*1A allele are fast metabolizers. CYP1A1 encodes another member of the cytochrome P450 superfamily of enzymes, which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. Its expression is induced by some polycyclic aromatic hydrocarbons, some of which are found in cigarette smoke. Genomic-wide association studies of coffee drinking suggest a strong association with CYP1A1/CYP1A2 and AHR genes. An increased intake of caffeine was associated with having a T-allele for CYP1A1-CYP1A2. They also found that another intergenic loci at 7p21 that corresponds to aryl hydrocarbon receptor (AHR), has a regulatory role in basal and substrate-induced expression of CYP1A1 and CYP1A2. They concluded that it is possible that genotypes associated with increased CYP1A2 enzyme activity, resulted in increased caffeine metabolism. This new study's objective is to examine if there is a relationship between coffee consumption and CYP1A1, CYP1A2 and AHR genotypes in the population of our previous pilot study.

Biography

Roseane Maria Maia Santos has completed her PhD from SUNY at Buffalo and is an Associate Professor at Department of Pharmaceutical Sciences at School of Pharmacy. She has published many papers, participated as peer Reviewer for various journals and has written chapters and textbooks in Portuguese, English and Korean.

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