

Factors affecting caffeine metabolism



Genetic variability

The CYP1A2 gene influences how you metabolize caffeine. Individuals with the CYP1A2*1F polymorphism (one slow and one fast copy) are considered "slow" caffeine metabolizers.



Alcohol and smoking

Alcohol consumption of 50 g per day can increase caffeine half-life by 72%. Smoking has been shown to stimulate caffeine clearance.



Diet

Grapefruit juice can decrease caffeine clearance and prolong half-life, whereas *Brassica* vegetables (e.g., broccoli, kale, cauliflower) and large quantities of vitamin C can increase caffeine clearance.



Certain medications

Some medications, such as oral contraceptives, anti-arrhythmic drugs, and calcium antagonists, can increase caffeine half-life.



Hormones

Caffeine clearance can slow down during the luteal phase of a woman's menstrual cycle. Pregnancy can prolong caffeine half-life, particularly during the third trimester.

Did you know?

The mean half-life of caffeine in healthy individuals is five hours; however, half-life can vary between two to ten hours.

Half-life: Refers to the time required for a concentration of a substance to be reduced by half