

Introduction

Green tea is more than just green liquid. It is thought to be the healthiest beverage on the planet. It is loaded with antioxidants and nutrients that have powerful effects on the body. This includes improved brain function, fat loss, a lower risk of cancer and many other benefits.

Many of the bioactive compounds in the tea leaves do make it into the final drink, which contains large amounts of important nutrients. It is loaded with polyphenols like flavonoids and catechins, which function as powerful antioxidants. These substances can reduce the formation of free radicals in the body, protecting cells and molecules from damage. These free radicals are known to play a role in aging and all sorts of diseases. One of the more powerful compounds in green tea is the antioxidant Epigallocatechin Gallate (EGCG), which has been studied to treat various diseases and may be one of the main reasons green tea has such powerful medicinal properties.



How genetics influence your response to green tea?

The COMT gene encodes an enzyme called catechol-O-methyltransferase that is involved in breaking down the neurotransmitters dopamine, epinephrine (also called Adrenaline), and norepinephrine (also called Noradrenaline). Both adrenaline & noradrenaline are the master fat burning hormones. The enzyme adds a methyl group (from SAM) to the dopamine, epinephrine, and norepinephrine, thus changing them into a different substance.

Alright, now what is the link between COMT and green tea? Green tea is able to increase energy expenditure and fat oxidation via inhibition of catechol-O-methyl transferase(COMT) by catechins, especially the famous catechin EGCG. However, this does not always appear unanimously because of large inter-individual variability. This may be explained by different alleles of the functional COMT gene polymorphism that are associated with COMT enzyme activity.

A 2014 study¹ looked at the differences in fat oxidation and energy expenditure with green tea based on COMT genotype. Those with the rs4680 GG genotype had significantly increased energy expenditure and fat oxidation with green tea, while those with the AA genotype had no increase.

¹ Hursel R, et al., 2014 Sep 19, "The role of catechol-O-methyl transferase Val(108/158)Met polymorphism (rs4680) in the effect of green tea on resting energy expenditure and fat oxidation: a pilot study."



My results

Gene	Your results	Effects
COMT(rs4680)	GG	Higher COMT activity = Higher dopamine reuptake/clearance in the prefrontal cortex part of the brain. Associated with significantly higher fat loss and energy expenditure response to green tea.