

Antiadhesive Effect of Green and Roasted Coffee on *Streptococcus mutans*' Adhesive Properties on Saliva-Coated Hydroxyapatite Beads

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J. Agric. Food Chem., 2002, 50 (5), pp 1225–1229

DOI: 10.1021/jf010958t

Publication Date (Web): January 25, 2002

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Abstract

Green and roasted coffees of the two most used species, *Coffea arabica* and *Coffea robusta*, several commercial coffee samples, and known coffee components were analyzed for their ability to interfere with *Streptococcus mutans*' sucrose-independent adsorption to saliva-coated hydroxyapatite (HA) beads. All coffee solutions showed high antiadhesive properties. The inhibition of *S. mutans*' adsorption to HA beads was observed both when coffee was present in the adsorption mixture and when it was used to pretreat the beads, suggesting that coffee active molecules may adsorb to a host surface, preventing the tooth receptor from interacting with any bacterial adhesions. Among the known tested coffee components, trigonelline and nicotinic and chlorogenic acids have been shown to be very active. Dialysis separation of roasted coffee components also showed that a coffee component fraction with 1000 Da < MW < 3500 Da, commonly considered as low MW coffee melanoidins, may sensibly contribute to the roasted coffee's antiadhesive properties. The obtained results showed that all coffee solutions have antiadhesive properties, which are due to both naturally occurring and roasting-induced molecules.