

THE ASTRINGENCY SENSATION: WHEN SALIVA MEETS TANNINS

Astringency is defined as the sensation of drying and puckering of oral mucosa. Astringency can be experienced during the consumption of plant food products, such as green tea, red wine or berries. This sensation comes from the interaction between tannins (*i.e.* plant-produced molecules) and salivary proteins. However, the mechanisms behind this sensation remain poorly known.



In the framework of the MUFFIN project, funded by the French National Research Agency (ANR), CSGA researchers studied the oral mechanisms behind the astringent sensation. To this end, they developed an *in vitro* cell-based model which reproduces the mucosa lining the oral cavity. This model is composed of epithelial cells covered by a layer of salivary proteins, called the *mucosal pellicle*.

Researchers have observed that tannins added to the model's surface interact with salivary proteins from the mucosal pellicle to form aggregates. This phenomenon results in increased frictional forces at the oral mucosal surface, which leads to the characteristic sensations of dryness and roughness of astringency.

This study has also shown that other salivary proteins, namely proline-rich proteins, reduce the structural changes produced by tannins in the mucosal pellicle. These proteins could have a protective effect against the alteration induced by tannins, as they capture tannins before they reach the digestive system. Consequently, individual differences in the perception of astringency could be explained by variations in the concentration of proline-rich proteins in saliva.

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To know more

Ployon S, Morzel M, Belloir C, Bonnotte A, Bourillot E, Briand L, Lesniewska E, Lherminier J, Aybeke E, Canon F (2018). Mechanisms of astringency: Structural alteration of the oral mucosal pellicle by dietary tannins and protective effect of *b*PRPs. *Food Chem*, 253, 79-87. <http://presse.inra.fr/Communiqués-de-presse/Astringence-et-proteines>

Key-words

Astringency; perception; saliva; tongue; mouth; tannin; salivary protein; wine