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Tribological Study on Saliva-Tea Compound Mixture: Correlation between Hui Gan (Sweet Aftertaste) Perception and Friction Coefficient

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The Hui Gan (sweet aftertaste) is a delicate sensation perceived after tea drinking, which lasts in the mouth and throat and leads to salivation for an extended period of time. Giving Hui Gan is seen as a key sensory indicator for quality tea brews. This project aimed to reveal the underpinning mechanisms of this sensory feature and its influencing factors. Tribology technique was applied in this study in parallel with the sensory analysis and other physiology assessments. A total of 26 panelists were recruited and trained for tea sensory analysis. Selected tea compounds were used for the study, for instance, ingredient A and B (reported of evoking Hui Gan), ingredient C (reported as sweetener), and ingredient D (reported of tasteless). According to the data observed in the sensory evaluation of tea compounds on Hui Gan perception, 12 panelists were selected and equally divided into two groups: sensitive subjects and non-sensitive subjects. The sensory analysis and tribological measurements were replicated. A self-designed tribometer was applied to measure samples composed of saliva and tea compound, either prepared in vitro as 1:1 mixture of tea brew and human saliva or spitted samples collected after oral processing. The results showed no clear correlation between Hui Gan perception and friction coefficient for non-sensitive subjects. However, the Hui Gan for sensitive subjects was found to be highly correlated with the friction coefficient measured at low sliding speed (< 1 mm/s).