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# Exposure to chocolate almond milk likely increases human salivary expression of proline rich proteins

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Salivary proline rich proteins (PRP) bind polyphenols, which can influence the sensation of astringency. However, the extent to which repeated exposure to polyphenols causes a change in salivary protein expression in humans is unknown. Studying this relationship is further complicated by proteins in foods that are functional analogs for salivary proteins, such as gelatin and bovine milk caseins, which mimic the activity of salivary PRP toward polyphenols. In this study, we tested whether exposure to chocolate milk would change salivary protein expression, and whether the type of milk would influence those changes. To do this, we added cocoa (2.5%) to almond and bovine milks, and also made another cocoa almond milk with gelatin (0.2%). Milks were provided to subjects in a 6-week study. In alternating weeks, subjects avoided high polyphenol foods for one week then drank one of each chocolate milk the next week. After each week, saliva and sensory ratings for the three milks were collected. Subjects also provided expectorates of each milk. Changes in sensory ratings and salivary proteomes from beginning to end of each intervention week were evaluated. Expectorated milk samples were analyzed to determine if binding of polyphenols differed across milk types and individual salivary profiles.

Preliminary proteomic analysis indicates higher concentrations of salivary PRP after exposure to chocolate almond milk, along with increases in two mucins, several potential immune related proteins, and carbonic anhydrase 6 (data pending for other milks). Analysis of expectorated milks indicates variability for binding and quantity of recovered polyphenols based on milk type; these data will be compared to salivary proteomes when the dataset is complete. The preliminary analysis, however, indicates that exposure to polyphenols alters expression of salivary proteins that may in turn influence sensory perception of the polyphenols.