

APPLICATION OF NATURAL, NON-NUTRITIVE, HIGH-POTENCY SWEETENERS AND SUGAR ALCOHOLS INDIVIDUALLY AND IN COMBINATION IN AN ACIDIFIED PROTEIN BEVERAGE MODEL

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ABSTRACT

Due to the food-matrix dependent properties of sensory profiles, the study investigated the application of sugar alcohols and natural, non-nutritive sweeteners individually and in combination in an acidified whey protein beverage model, with a purpose of developing a naturally sweetened sugar-free, clear protein beverage. The ideal sucrose concentration was determined to be 10.1% by an acceptance sensory test using just-about-right scales. The equi-sweetness concentrations relative to 10.1% sucrose, which was determined by magnitude estimation scales, were 0.0876% for rebaudioside A, 0.130% for monk fruit extract, 15.5% for erythritol, 26.7% for lactitol, and 9.53% for xylitol. In Quantitative Descriptive Analysis, thirteen attributes (initial sweetness, sweet aftertaste, long-lasting sweetness, initial sourness, sour aftertaste, long-lasting sourness, initial bitterness, bitter aftertaste, long-lasting bitterness, metallic taste, anise taste, viscosity, and dryness) were utilized to describe sensory profiles. Rebaudioside A and monk fruit extract had distinct “off-flavors” (bitterness, metallic taste and anise taste), and showed differences in sweetness intensity and temporal profile compared to that of sucrose. Sugar alcohols showed a significant covering ability on “off-flavors”, and improved the temporal profile of rebaudioside A and monk fruit extract. The mixture of rebaudioside A and erythritol (sweetness ratio of 50/50) achieved the closest sensory profile to that of sucrose.