

67 Sensory and instrumental measurements of the sensory properties of powdered buttermilk. M. Spill*¹, J.-X. Guinard¹, and R. Jimenez-Flores², ¹*Department of Food Science and Technology, University of California, Davis*, ²*Dairy Products Technology Center, California Polytechnic University, San Luis Obispo*.

Buttermilk is the by-product of butter production. Over 40% of buttermilk is lost each year due to deterioration of quality, particularly sensory quality, yet sensory properties of buttermilk are not fully understood. To improve the knowledge of the sensory properties of buttermilk a descriptive language was developed. A panel of 10 judges developed a lexicon of sensory properties of reconstituted powdered buttermilk using industry samples. Thirty-three descriptors were defined including, for appearance: yellow and blue; for aroma: wheat, rice, grain, goat's milk, wet dog, cooked milk, powdered milk, cardboard, soy, butter, mac-n-cheese, white cheese, caramel, and egg; flavor attributes include: wheat, rice, grain, goat's milk, milk sugar, cooked milk, powdered milk, cardboard, soy, butter, mac-n-cheese, white cheese, caramel, and egg; and textural attributes include: thickness, mouthcoating, and astringency. References for each attribute were used to train panelists on these terms. This lexicon was validated by carrying out evaluations of 20 industry buttermilk samples. Sensory profiles were developed for the buttermilk samples using descriptive analysis techniques. Oxidation of the samples was examined using gas chromatography headspace analysis of hexanal after one and two weeks of storage at 30C. Susceptibility to oxidation and sensory attributes were compared. Preliminary work showed a positive correlation between susceptibility to oxidation and the following attributes: rice aroma, goat's milk aroma, wet dog aroma, egg aroma, egg flavor, grain flavor, soy flavor, and astringent/drying texture. A negative correlation was found between susceptibility to oxidation and caramel aroma and flavor. Having a standard sensory language for buttermilk will assist with training of sensory panels and communication between different industry and research groups.

Key Words: Buttermilk, Sensory, Descriptive analysis