

## Flavor Evaluation of UHT Reconstituted Milk Processed by Direct and Indirect Heat Treatment Using Sensors

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We applied sensor analysis to the evaluation of the flavors of five types of milk, including ultra high temperature (UHT) processed milk and four types of reconstituted milk prepared by combining raw milk, skim milk powder, and butter, and performing different pasteurization methods (indirect heating and direct heating). We conducted a comprehensive evaluation of the flavors by analysis with a taste sensor and an odor sensor, sensory evaluation, and gas-chromatography (GC). We determined the flavor characteristics of each type of milk through sensory evaluation. We found that, to add richness, it was effective to use raw milk and use a plate-type UHT pasteurizer with indirect heating. To give a finish with a plain flavor, it was effective to use a steam infusion-type UHT pasteurizer with direct heating. GC analysis revealed a trend that samples with a flat flavor had a smaller amount of detected volatile compounds. In sensor analysis, examination of the relationships between the results of the odor sensor and taste sensor analyses and the sensory evaluation and GC analysis revealed a correlation between the amount of volatile compounds and the “cooked flavor” with the odor sensor, and a correlation between the “cooked flavor” and “saltiness” with the taste sensor. This suggests the possibility of objectively indicating the flavor characteristics of milk in this experimental system using such sensors.

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