COMPARISON OF SENSORY CHARACTERISTICS, AND INSTRUMENTAL FLAVOR COMPOUNDS ANALYSIS OF MILK PRODUCED BY THREE PRODUCTION METHODS

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ABSTRACT

The objectives of this research were to carry out an analytical and sensory comparative studies on the flavor constituents of milk from three production systems: organic (O), pasture-feed based system (P), and conventional (C). The volatiles compounds were extracted from the milks with a DVB/CAR/PDMS SPME fiber and transferred into GC-MS for identification and quantification. Statistical analysis showed significant differences between C and P milk on hexanal, pentanal, octanal and nonanal content which were attributed to the degree of lipid oxidation between milks. An unidentified compound at retention time of 3 minutes was suggested as a discriminating compound for the three type of milks, and pentanal was pointed out as a possible discriminator compound for organic milk.

From the preference test, we concluded that panelists clearly differentiated organic milk from conventional and milk from pasture-fed cows for their overall flavor, liking, and mouthfeel, whereas distinction between conventional and milk from pasture-fed cows was only achieved for overall appearance. These results were in agreement with a triangle test which showed that panelists clearly

differentiated organic milk from the rest. Pentanal, as well as a common set of potent odorants that were only present in the organic milk chosen for the sensory study, were likely responsible for the ability of the panelists to distinguish the organic from the other two milks.