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Calotropain as a coagulant enzyme in fresh cheese-making with dromedary, cow, goat and ewe milk: Physicochemical, sensory properties and microstructure characterization

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The aim of this study was to determine the physicochemical and sensory characteristics of traditional fresh cheese "peulh type". It was made from cow, goat, ewe or dromedary milk varieties. The coagulation was achieved by using calotropaïn, a coagulant enzyme contained in Calotropis procera latex plant, of Asclepiadaceae family. While ewe's milk had higher chemical constituent values, dry extract of 18.56%, and fat content of 52 g / L, dromedary milk, was proved to have chemical contents, which were still low compared to other milk varieties. Its total dry extract was 10.45% and its fat content was 23 g / L. The four fresh cheese varieties from the milk samples resulting from calotropaïn coagulation had a pH ranging from 6.9 to 7.05 and a lactic acidity between 0.1 and 0.2 g / 100 g. The ewe's fresh cheese had the highest values of total dry extract of 47.12% and a fat content of 2.63%. However, dromedary fresh cheese had the lowest values of total dry matter of 24.23% and a fat content of 0.11%. The fresh cheese yields were variable between samples. The highest yield was determined for the ewe's fresh cheese of 30.7 %, and the lowest one was for the cow's one of 14.28 %. The sensory analysis showed the particularity of fresh cheese obtained from dromedary milk, where a good white color, spreadable, and smooth, creamy and soft texture are noted. On the other hand, the other fresh cheese varieties from cow, goat and ewe milk had less white color, a firm texture, were moderately rough, non-creamy, slightly spreadable with a rather strong lactic odor. Despite the fact that ewe's milk was the richest in dry extract and fat, compared to other types of milks, the dromedary's fresh cheese was, however, the most appreciated sensory. In addition, the confocal laser scanning microscopy (CLSM) had characterized the four, cow, ewe, goat and dromedary fresh cheeses microstructures. Indeed, sizes of their casein micelles and fat globules as well as their mode of aggregation and coalescence respectively, noted an apparent and a visible dissimilarity.

Biography

Férial Aziza Benyahia is a distinguished researcher at the Food Engineering Laboratory (GENIAAL) within Frères Mentouri University, Constantine 1 (U.C.1), and Algeria. Her expertise lies in the realm of food engineering, where she pioneers innovative approaches. With a strong academic background and a commitment to advancing food science, Benyahia plays a vital role in shaping the field's future. Her contributions are invaluable to the scientific community.