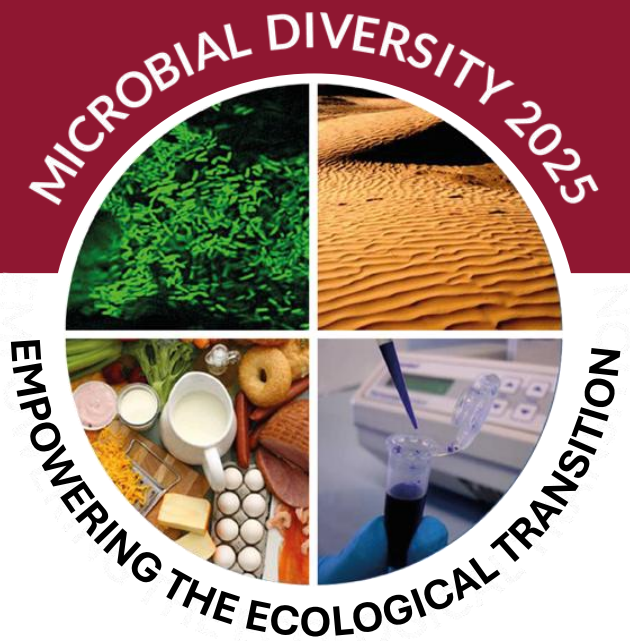




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Abstract**



Enhancing the microbiological, physicochemical, and sensory properties of fresh ovine 'Tuma' cheese through the addition of feeding prickly pear by-product silage in the ewe's diet

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This study investigated the potential of prickly pear by-product silage as feed in the diet of lactating ewes on improving the quality characteristics of fresh sheep cheese "Tuma". Tuma cheese is a fresh pressed Sicilian cheese made from ewe's milk obtained by pressed cheese technology. A Latin square design was used to feed three different groups of ewes: a control diet (CTR) consisting of hay and concentrate, a diet supplemented with prickly pear peels silage (PPP), and a diet containing prickly pear pulp, peels and seeds silage (PPS). Milk and cheeses samples were evaluated for their microbiological, physicochemical and sensory properties. The total phenol content (TPC), antioxidant capacity (AOC) and fatty acid profiles of cheese were investigated. The microbiological profile of milk and cheese was similar among all diets, indicating no negative effect of PPP and PPS on fermentation process. MiSeq Illumina analysis identified high concentrations of Lactic Acid Bacteria (LAB) in almost all cheese samples. The physical-chemical analysis not showed significant differences between the cheeses. The highest TPC levels of cheese were observed in PPP, followed by PPS, while CTR presented the lowest levels ($P < 0.01$). CTR cheese showed a significantly ($P < 0.01$) higher saturated fatty acids (SFA) % than PPP and PPS. Moreover, poly unsaturated fatty acids (PUFA) % was significantly lower in CTR than PPP and PPS cheese. These results suggest that PPP and PPS silage can be partially incorporated into the diets of dairy ewes because it tends to improve the microbiological, physical-chemical and sensory characteristics of fresh "Tuma" cheese.

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