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Pulsed electric field treated milk improves the quality of curd

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Pulsed electric field (PEF) is a potential pre-treatment technique to improve quality of milk by reducing its microbial load. However, since significant volumes of milk is processed by the dairy industry to dairy products, there is a need to evaluate the quality and acceptability of such products prepared using PEF treated milk. The present study aims at addressing this issue with respect to a popular fermented dairy product. Milk was treated with high voltage and frequency (55kV & 90 Hz) square waves of pulse width 900 µs for 100s. Curd samples were prepared using milk subjected to three treatment protocols, i.e. conventional heat treatment (CHT), PEF treated milk subjected to conventional heat treatment (PT-CHT) and PEF treated milk (PT). The initial count in the curd prepared by the treatment protocol T3 curd was higher (7.06±0.47 LN CFU/g) compared to the treatments T1 and T2 i.e. 6.46±0.83 LN CFU/g and 6.60±0.87 LN CFU/g, respectively. The growth of the LAB culture in the three samples was well-described using first order kinetics (R2 ~1) and the linear models fitted. At the end of 6 h of incubation at 37 ºC, the LAB counts observed for the samples were 15.19±0.18 LN CFU/g, 14.40±0.17 LN CFU/g and 14.69±1.30 LN CFU/g, for the curd prepared using the treatment protocols T1, T2 and T3, respectively. PT samples resulted in curd with higher acidity (0.17±0.005 % LA) and microbial load (6.65±0.27 log CFUg-1), while the PT-CHT samples resulted in curd with better whey holding capacity. The firmness recorded for CHT, PT-CHT and PT was 1.15±0.05, 1.32±0.04 and 0.91±0.03 N, respectively. Shelf life analysis showed no difference between curd prepared using the CH and PT-CHT at 12 days. The study demonstrated the potential of employing PEF with CHT to produce good quality curd.

Biography

Preeti Birwal currently working in the area of non-thermal food preservation, fermented beverages, food packaging, and technology of millet-based beer. Advising several master scholars, participated in several national and international conferences and seminars, delivered lectures as Resource Person, Keynote speaker, in national, international conferences, and training programs, completed AUTOCAD 2D & 3D certification, received the Outstanding Scientist Award in the 7th International Scientist Awards on Engineering, Science, and Medicine, Women Scientist Award" by the Society of Agriculture Research and Social Development. Sponsorship to attend World Congress on Food Technology and Nutrition, 2022, Sponsorship and speaker at "International webinar on Nutrition and Healthcare" during November 24-25, 2022 in Paris, France, training of 21, 7 and 5 days. I have more than 125 publications including, 18 papers, 8 international CRC-Taylor and Francis edited books, 11 book chapters, about 30 popular articles, and 5 conference papers and 57 abstracts, 2 editorial opinions to her credit. Serving as an external examiner for various, Indian state agricultural universities. I am also serving as editor and reviewer of several journals national and international journals. I have reviewed more than 50 manuscripts.