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Key modifying roles of microbial transglutaminase (MTGase) in the development of innovative probiotic and non-probiotic yogurts with improved functional and quality characteristics have been comprehensively reviewed. MTGase crosslinking reactions with milk proteins stabilize the three-dimensional structure of yogurt. Yogurts treated with MTGase showed decreased syneresis, increased water-holding capacity and viscosity, homogeneous structure, desired texture, and physicochemical high stability during storage time. The utilization of MTGase does not affect negatively the sensory attributes of yogurt. Inclusion of MTGase into acidified yogurt drinks reduces the serum separation with an improved viscoelasticity. This multi-functional enzyme also protects the viable starter and probiotic cells in yogurts. Further studies are required to assess the viability of probiotics in yogurts protected using MTGase-mediated microcapsules.