

## **Comparison of microbial transglutaminases from different sources on improving physicochemical properties of plant-based chicken nuggets**

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In this study, microbial transglutaminase (MTG) was used to improve the physicochemical properties of plant-based chicken nuggets. The MTGs from different sources were analyzed for its specific activity, optimal reaction conditions, as well as using bovine serum albumin as a substrate to evaluate its ability to catalyze the cross-linking reaction. The physicochemical properties of plant-based chicken nuggets were compared with addition of different MTGs which included recombinant microbial transglutaminase (RMTG), commercial microbial transglutaminase (CMTG), and methylcellulose (MC) as blank control. The results showed that the plant-based chicken nuggets added with RMTG showed a dense and non-porous structure, with the highest water content and water retention capacity compared with the other groups, and there was no significant difference in color and water activity among all groups. In terms of texture, compared with the blank group, the hardness, elasticity and chewiness of the RMTG group were significantly improved, whereas the stickiness was significantly decreased. The texture data of RMTG group was comparable to those of CMTG, and the texture of plant-based chicken nuggets added with RMTG after frying was close to that of chicken nuggets made from chicken. In terms of sensory evaluation, the hardness, elasticity, and chewiness of the RMTG group were remarkably improved, and the stickiness was decreased compared with the blank group. The preference evaluation indicated that CMTG showed the highest preference scores for texture and overall preference compared with blank group and MC. Based on the findings, RMTG has the potential to improve the textural properties of plant-based chicken nuggets.