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Thermal stability and structural change of the sweet-tasting protein brazzein

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Brazzein is a sweet-tasting protein isolated from the fruit *Pentadiplandra brazzeana* Baillon found in West Africa. Brazzein is an intensely sweet-tasting protein with good stability and it is 500-2000 times sweeter than sucrose on a weight basis. It was a single-chain polypeptide consisting of 54 amino acid residues, corresponding to a molecular mass of approximately 6.5 kDa. According to previous research, brazzein has shown its high stability when heated at 80°C for 4 hours and remained non-denatured. However, to be processed and applied to food industry, it is better to have higher stability for further application. In this research, we investigated the change of secondary and tertiary structures of brazzein and mutants through thermal and pH stability test. Brazzein and mutants were treated with heat at 70 - 100°C for 1 - 8 hours, measured the changes of their structures by Circular Dichroism spectroscopy and tested their sweet taste activities. We found that there is no change in brazzein structure even by incubating at 100°C for up to 4 hours and also retains its sweet taste activity. From these results, we suggest that brazzein is very stable, and it could be apply to various food industries.

Biography

Hyun-Joo Jo completed Masters in Biochemistry at Chung-Ang University at the age of 25 and is under course of doctoral degree at the same university researching sweet-tasting protein and sweet taste receptor. During the course of degrees, she has published 6 papers including top 10% journals in each field and actively presented her research progress in several domestic and international conferences. In addition, she was awarded 'The excellence award of a poster' about brazzein mutants in 2012 spring KOANAL (The Korean Society of Analytical Sciences) being acknowledged her research results and presentation ability.

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