

Development of bioactive short peptides derived from rice bran protein and their application to cosmetic and skin-care products

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In this study, to prepare the fraction containing multifunctional cationic peptides, we first hydrolyzed rice bran protein (RBP) with pepsin. We separated the enzymatic hydrolysate of RBP into 20 fractions containing peptides with different isoelectric point (pI) values by ampholyte-free isoelectric focusing (autofocusing). Subsequently, we examined the antimicrobial activity of each fraction against four pathogens. In addition, we purified the cationic peptides from fractions exhibiting antimicrobial activity by reversed-phase high-performance liquid chromatography and identified them by matrix-assisted laser/desorption ionization–time-of-flight mass spectroscopy. Of five cationic peptides identified, we chemically synthesized three peptides with high pI values and evaluated their multiple functions, including antimicrobial, lipopolysaccharide-neutralizing and angiogenic activities. Our results demonstrated that the three identified cationic peptides exhibited multiple functions. Fractions containing cationic peptides obtained from RBP hydrolysate have the potential to be used as functional ingredients in cosmetic and skin-care products.