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## The antioxidation, collagenase and elastase inhibitory activity of low molecular weight peptide derived from donkey skin gelatin

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Free radical and oxidative modification of proteins, lipids, DNA and cellular molecules by reactive oxygen species (ROS) cause age-related degenerative conditions and a wide range of common diseases. In recent years, considerable studies have been directed towards evaluating gelatin peptides that can prevent against UV-induced oxidative stress for skin health. The objective of this study was to evaluate physiological activity of gelatin peptide derived from donkey skin. The gelatin extraction process was carried out by using autoclave at high temperature and pressure (121 °C, 1.5kgf/cm<sup>2</sup>). The enzymatic hydrolysis of gelatin extracts were then performed using 3 different proteases (Foodpro alkaline protease, Pancreatin and Protease P) at 45 °C, pH 7.0 for 3h, 6h under the same condition. The each donkey gelatine hydrolysates (DGH) were passed through a 3 kDa molecular weight cut-off membrane, to separate low molecular weight peptide (LDGH, less than 3 kDa) from them. The antioxidation, collagenase and elastase inhibitory activity of LDGH were performed. LDGHs of treatments showed higher DPPH radical scavenging activity, ORAC and FRAP value than their original DGH (p<0.05). Especially, LDGH of F3, P3 showed the highest DPPH radical scavenging of 11.86, 11.86 μM TE/g, ABTS radical scavenging activity of 50.56, 51.59 μM TE/g and FRAP value of 3.14, 2.96 μM TE/g respectively, among LDGH of treatment (p<0.05). And LDGH of P3 indicated the highest ORAC value of 307.26 μM TE/g (p<0.05). Moreover, LDGH of F3, P3 inhibited collagenase activity of 45.31%, 54.09% and down-regulated elastase activity of 23.68%, 18.76%, respectively. In conclusion, LDGH derived from donkey skin could easily react and eliminate with free radicals and inhibited collagenase, elastase activity. Overall, LDGH has the potential to be agent for skin health.

### Biography

Jung-Soo Kim has his expertise in evaluation and improving added-value of donkey by-product and its function. He's got Bachelor's degree from Kangwon National University in 2016, Korea. Now, He is taking his Master's degree at Department of Animal Products and Food Science in Kangwon National University, Korea. He has license for 'Engineer Food Processing'. He is financially supported by Brain Korea 21 Plus Project from the Ministry of Education and Human Resources Development in Korea.

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