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Isolation and Properties of Antioxidative Peptides from Water-Soluble Royal Jelly Protein Hydrolysate

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Several novel antioxidative peptides from the hydrolysate of water-soluble royal jelly protein (WSRJP) were isolated, identified, and characterized. WSRJP was extracted from royal jelly and hydrolyzed with protease N, and the resulting hydrolysate was fractionated by ultrafiltration with cutoff membranes of 1 and 3kDa. Three fractions (<1kDa, 1-3kDa, and >3kDa) were separated. The antioxidative activity of the fractions against the peroxidation of linoleic acid was determined *in vitro*, using the 1,3-diethyl-2-thiobarbituric acid method. The <1kDa fraction, which exhibited the highest antioxidative activity, was further purified using anion-exchange and reverse phase high performance liquid chromatography. Fourteen antioxidative peptides were identified using a protein sequencer and electron spray ionization-mass spectrometry. Among these, four dipeptides (Phe-Asp, Trp-Val, Leu-Trp, and Trp-Leu) were revealed to have potent antioxidative activity against lipid peroxidation. Moreover, three of these antioxidative dipeptides (Phe-Asp, Trp-Val, and Leu-Trp) were found to protect against oxidative stress-induced cell death in human cultured cells.

Keywords: [antioxidative peptide](#), [royal jelly protein](#), [hydrolysate](#), [oxidative stress](#), [human cultured cell](#)



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