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# Lunasin and lunasin-like peptides inhibit inflammation through suppression of NF-kappaB pathway in the macrophage.

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## Abstract

Inflammation is part of the host defense mechanism against harmful matters and injury; however, aberrant inflammation is associated to the development of chronic diseases such as cancer. Lunasin is a novel peptide that demonstrates potential anticancer activity against mammalian cancer cell lines and may play a role in inflammation. The objective of this study was to determine the mechanism of action by which lunasin and lunasin-like peptides exert their anti-inflammatory properties using RAW 264.7 macrophage cell line as an in vitro model. We purified three peptides (5, 8, and 14 kDa) from defatted soybean flour with a positive immunoreactivity towards lunasin mouse monoclonal antibody. Treatment with these peptides (10-50 microM) resulted in the inhibition of pro-inflammatory markers in lipopolysaccharide (LPS)-induced RAW 264.7 macrophages. The 5 kDa peptide inhibited most potently pro-inflammatory markers including interleukin-6 production (IC(50)=2 microM), interleukin-1beta production (IC(50)=13 microM), nuclear factor-kappa B (NF-kappaB) transactivation (IC(50)=21 microM), cyclooxygenase-2 expression (IC(50)=25 microM), nitric oxide production (IC(50)=28 microM), inducible nitric oxide synthase expression (IC(50)=37 microM), prostaglandin E(2) production (IC(50)=41 microM), p65 nuclear translocation (IC(50)=48 microM) and p50 nuclear translocation (IC(50)=77 microM). In conclusion, lunasin and lunasin-like peptides purified from defatted soybean flour inhibited inflammation in LPS-induced RAW 264.7 macrophage by suppressing NF-kappaB pathway.

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