

## ABSTRACT

Natural polysaccharides named PEP-0.1-1, PEP-0-1 and PEP-0-2 from edible mushroom species *Pleurotus eryngii* were obtained in the present study. Results showed that molecular weights of these polysaccharides were 3235, 2041 and 23933 Da, respectively. Further, structural characterization revealed that PEP-0.1-1 had a  $\rightarrow 4\text{-}\alpha\text{-D-Glcp-1}\rightarrow$  backbone and contained  $\rightarrow 4\text{-}\alpha\text{-D-Glcp}$  and  $\rightarrow 4\text{-}\beta\text{-D-Glcp}$  reducing end groups. PEP-0-1 backbone contained  $\rightarrow 4\text{-}\alpha\text{-D-Glcp-1}\rightarrow$  and  $\rightarrow 6\text{-}\alpha\text{-3-O-Me-D-Galp-1}\rightarrow$ , and the side chains contained  $\alpha\text{-D-Glcp}$ ,  $\beta\text{-D-Manp-1}\rightarrow$  and  $\alpha\text{-D-Glcp-3}\rightarrow$ . However, PEP-0-2 backbone consisted of  $\rightarrow 4\text{-}\alpha\text{-D-Glcp-1}\rightarrow$  and  $\rightarrow 6\text{-}\alpha\text{-3-O-Me-D-Galp-(1}\rightarrow 6\text{-}\alpha\text{-D-Galp-1}\rightarrow$  while the side chains contained  $\alpha\text{-D-Glcp}$  and  $\beta\text{-D-Manp-1}\rightarrow$ . Biological activity analysis was then carried out and found that all these polysaccharides could significantly suppress the relative mRNA expression of toll-like receptor 4, nitric oxide, tumor necrosis factor- $\alpha$ , interleukin (IL)-1 $\beta$  and IL-6 in lipopolysaccharide (LPS)-induced inflammation of RAW264.7 cells, as well as the over secretion of the above cell cytokines. Moreover, Western blotting analysis revealed that all these purified fractions displayed significant inhibition effects on the expression of c-Jun N-terminal kinases protein protein induced by LPS in mitogen activated protein kinase pathway, along with the relieving on the inhibition effect of LPS on I $\kappa$ B- $\alpha$  protein expression. In summary, the information generated by the present study could provide a theoretical basis for the exploration of novel healthy food materials from edible mushroom with anti-inflammation activities.