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Protective effects of lentinan on lipopolysaccharide induced inflammatory response in intestine of juvenile taimen (*Hucho taimen*, Pallas)

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Protective effects of lentinan on lipopolysaccharide induced inflammatory response in intestine of  
juvenile taimen (*Hucho taimen*, Pallas)

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Abstract: Antioxidant effects of lentinan on LPS induced inflammatory response in intestine of juvenile taimen were evaluated, and its prebiotic-like efficacy on intestinal microbiota was also investigated. The results showed that LPS decreased the activities of antioxidant enzymes and increased the expression levels of inflammatory cytokines in intestine of juvenile taimen. Dietary lentinan significantly enhanced intestinal antioxidant ability by increasing the activities of SOD, GSH-Px and CAT, and inhibiting the lipid peroxidation in juvenile taimen. Appropriate lentinan prevented the increases in the expression levels of TGF- $\beta$ , TNF- $\alpha$ , IL1 $\beta$ , IL6 and IL8 and ensured the relatively high expression levels of claudin d, SOD, CAT and I $\kappa$ B $\alpha$  after LPS challenge. Furthermore, dietary lentinan effectively modified intestinal microbiota, represented by increasing the relative abundance of beneficial bacteria such as Lactobacillaceae, Lachnospiraceae and Ruminococcaceae, and decreasing those of detrimental bacteria such as Enterobacteriaceae, Fusobacteriaceae and Flavobacteriaceae. Taken together, dietary lentinan availably decreased LPS induced inflammatory response, indicating that lentinan has the potential anti-inflammatory effects for preventing inflammation diseases in cold-water fish.

Keywords: *Hucho taimen*, lentinan, inflammatory response, intestinal microbiota

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