Immunostimulatory effects of fermented vegetable products on the non-specific immunity of Japanese flounder

*Paralichthys olivaceus*

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The stimulatory effect of fermented vegetable product (FVP) upon the phagocytic and superoxide generation of leukocytes was studied in Japanese flounder *Paralichthys olivaceus*. The phagocytic activity of casein-induced, intraperitoneal leukocytes was investigated and quantified, that is the activity significantly increased (*P* <0.05 or <0.01) by the addition of FVP beyond 3mg/kg body weight. Further analysis investigated the effect of FVP on superoxide generation in leukocytes. Established *in vitro* cytochrome c reduction assay was used to measure superoxide generation; reduced levels of FVP in assay samples had a profound effect on superoxide generation. FVP was also incorporated in commercial diets and fed to Japanese flounder for 4 weeks. The phagocytic activities and superoxide generation of peritoneal induced leukocytes were significantly higher (*P* <0.05, <0.01) in fish fed the FVP supplemented diet than fish fed the control diet. FVP feeding in fish had a significantly higher (*P* <0.05) activity of lysozyme than in the control fish.