

Crud Polysaccharide from *Prunella vulgaris* L. improves Non-alcoholic fatty liver disease by restoring intestinal homeostasis

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Abstract:

Introduction: *Prunella vulgaris* L. is traditionally believed to have a liver protecting effect in China. It has been proven to have protective effects on the liver and reduce fibrosis. But the active ingredients in it are currently uncertain. We assume that the macromolecular components in *Prunella vulgaris* can improve liver disease through the action of gut microbiota. O

Materials and Methods: The crude polysaccharide of *Prunella vulgaris*, is extracted by water and precipitated by 85% ethanol, named PVE85. The aim of this study is to explore the effect and mechanism of PVE85 on Nonalcoholic fatty liver disease (NAFLD). A high-fat diet with choline deficiency (CDAHFD) in trace amounts of methionine (0.1%) induces a NASH animal model in male C57BL/6 mice. After 4 weeks of induction, PVE85 solution (dissolved in 0.5% CMCNa) 200mg/kg/day was orally administered.

Results: ur results indicate that PVE85 significantly reduces liver injury and liver lipid accumulation. The mRNA levels of inflammatory factors which associated with NAFLD, were significantly reduced. PVE85 weakens the thickening and cross-linking of collagen fibers in the liver of NASH mice, and inhibits mRNA expression of other collagen fibers, including TGF- β , α -SMA, collagen I, and collagen IV. PVE85 restore changes in gut microbiota and improve intestinal barrier dysfunction in NASH mice, increasing the abundance of Firmicutes and Bacteroidetes, and reducing the abundance of Proteobacteria.

Conclusions: This study confirms the protective effect of traditional Chinese medicine *Prunella vulgaris* polysaccharides on NAFLD, and its mechanism is closely related to maintaining intestinal homeostasis (intestinal barrier, immune, and intestinal bacteria).

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