Study on the effect and mechanism of wolfberry polyphenols in regulating high-fat intestinal type to alleviate the course of NAFLD

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Non-alcoholic fatty liver disease (NAFLD) is a common metabolic liver disease with a significant increase in incidence worldwide. The escalating prevalence of obesity and diabetes have been identified as key factors contributing to NAFLD. wolfberry polyphenols, recognised as natural polyphenols, exhibit potent lipid-lowering properties and show efficacy in modulating enterotype. The therapeutic potential of wolfberry polyphenols in ameliorating high-fat intestinal conditions holds promise for alleviating and preventing the progression of NAFLD. Our study demonstrates that wolfberry polyphenols effectively alleviate NAFLD-associated glucose intolerance and ameliorate liver damage as evidenced by histological examination using HE staining. After treatment with 200 mg/kg worfberry polyphenols, the inflammatory infiltration completely disappeared, fat droplets essentially disappeared and the tissue morphology closely resembled that of the control check group compared to the hight fat diet group. Wolfberry polyphenols have a pronounced effect on reducing hepatic triglycerides, total cholesterol (TC), low-density lipoprotein (LDL) and high-density lipoprotein (HDL). In addition, enzyme-linked immunosorbent assay analyses indicate that wolfberry polyphenols significantly reduce serum levels of the inflammatory factors TNF-α, IL-6 and IL-10. Non-targeted liver metabolomic analysis indicates that Lycium barbarum polyphenols modulate NAFLD liver health primarily through the regulation of methionine and tryptophan pathways. Furthermore, wolfberry polyphenols exhibit regulatory effects on the content of short-chain fatty acids in the intestinal flora. These findings provide a solid theoretical basis and suggest a promising avenue for future

research into the use of wolfberry polyphenols in the management of NAFLD. The study suggests that these polyphenols could serve as an alternative intervention for NAFLD by modulating oxidative stress, inflammatory factors, gut microbiota and endogenous liver metabolism.