**Supplementary File 1.** Supplementary Materials.

**Materials and methods**

**Chemicals and reagents**

The components of BGXZW are displayed in Supplementary Figure 1A. To be consistent with previous experiments, we still purchased the four herbs (Yinchen, Baihuasheshecao, Zhizi, Sangjisheng) from Ganzhou city (Jiangxi province, China) on March 2022. The other herbs (Danshen, Gancao, Dahuang) were purchased from the pharmacies of Shenzhen People’s Hospital on March 2022. All plants were identified by Dr. XB Zeng of the Shenzhen People’s Hospital, and voucher specimens (no. 20220301, 20220302, 20220303, 20220304, 20220305, 20220306, and 20220307 for *A. capillaris*, *H. diffusa*, *G. jasminoides*, *T. sutchuenensis*, *S. miltiorrhiza*, *Glycyrrhiza uralensis*,and *R. palmatum*, respectively) were deposited at the Center Lab of Longhua Branch, Shenzhen People’s Hospital, Second Clinical Medical College of Jinan University, Shenzhen, China. The MCD diet and methionine and choline-sufficient (MCS) diet were bought from Jiangsu Medison Biopharmaceutical Co., Ltd. (Yangzhou City, China). Diagnostic kits for total triglyceride (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-c), alanine aminotransferase (ALT), and aspartate transaminase (AST) were obtained from the Nanjing Jiancheng Bioengineering Institute (Nanjing, China). A hematoxylin and eosin (H&E) dye kit was also obtained from the Nanjing Jiancheng Bioengineering Institute (Nanjing City, China). Antibodies to NF-kB p65, p-NF-kB p65, mTOR, p-mTOR, ULK1, p-ULK1, p62, LC3A/B, and *β*-actin were obtained from Cell Signaling Technology (Danvers, MA, USA). Antibodies against COX2 and iNOS were from Proteintech (Wuhan City, China). Anti-IL-1β antibody was purchased from Beyotime Institute of Biotechnology (Shanghai City, China). The RevertAid First Strand cDNA Synthesis Kit and ChamQ Universal SYBR qPCR Master Mix were obtained from Nanjing Vazyme Biotech Co., Ltd (Vazyme, Nanjing, China). Polyene Phosphatidylcholine Capsule (PPC, Essentiale, positive control) was purchased from Sanofi-aventis Pharma Ltd.

**Preparation of BGXZW Extracts**

Except for Dahuang, the other six herbs were boiled on high heat with pure water for 1 h, and Dahuang was then added. The ratio of total herbs to water is 10:1. The heat was then turned off after 10 min, and the filtrate was collected. After filtration and removal of solvent by evaporation in vacuo, the aqueous extracts were concentrated to 5 g/mL (crude herbal concentration).

**HPLC analysis of BGXZW** **Extracts**

HPLC analysis was performed on Essentia LC-16 HPLC system (Shimadzu, Tokyo, Japan) equipped with a diode-array detector. All separations were performed using a YMC-Pack ODS-A column (4.6 mm × 250 mm, 5 μm) at 30 °C and a flow rate of 1.0 mL/min. Gradient elution was carried out with water containing 0.1% trifluoroacetic acid water (phase A) and methanol (phase B). The flow rate was 1.0 ml/min, and the gradient elution was as follows: 0–20 min, 10%–30% B; 20–30 min, 30%–35% B; 30–50 min, 35%–50% B; 50–60 min, 50%–60% B; 60–70 min, 60%–90% B; 70–80 min, 90%–100% B; and 80–85 min, 100% B.

**Animals and experimental groups**

Male Sprague Dawley rats {190 ± 10 g, License Number: SYXK [Yue] 2020-0262} were purchased from Jiangsu Huachuang Xinnuo Pharmaceutical Technology Co., LTD. The animal experiments were approved by the Institutional Animal Care and Use Committee of the Shenzhen People’s Hospital (Approval Document No. LL-KT-2021797). A standard living environment and diet were provided for these animals. All research procedures were in accordance with the regulations of the above-mentioned committee.

After 1 week of acclimatization, all rats were randomly divided into six group, with eight rats in each group. Six groups of rats were arranged as the control group, model group, PPC group (120 mg/kg/d), BGXZW low-dose group (1.67 g/kg/d), BGXZW high-dose group (5 g/kg/d), and SWQGT group (3 g/kg/d). In the previous study, 3 g/kg/d SWQGT could improve NASH in MCD diet-fed rats,so the dose determination of BGXZW (5 g/kg/d) was based on the previous increase of the same amount, while setting up a low dose group (1.67 g/kg/d). Rats in the control group were fed the MCS diet, and the other five rat groups were fed the MCD diet. Rats in the drug groups were given the corresponding concentration of drugs every day via gavage, whereas the control and model rat groups received equal amounts of water. At the end of 4 weeks, the rats were anesthetized and sacrificed. Their organs (i.e., heart, liver, spleen, lung, and kidney) were removed and weighed, and the viscera indices were counted (viscera index = viscera weight/body weight × 100%). In addition, liver samples were frozen in liquid nitrogen until biochemical analyses were performed.

**Histology determination**

Tissue samples of the heart, liver, spleen, lung, and kidney were cut into small pieces, fixed in 10% neutral buffered formalin for 24 h, dehydrated, embedded in paraffin, and then sliced into 5-mm-thick sections. H&E was used to stain the sections, and a microscope was used to observe the histopathological changes of these organs.

**Biochemical analyses**

The abdominal aorta blood of all rats was collected, and the upper serum was collected after centrifugation for further analysis. Serum TC, serum TG, serum LDL-c, serum ALT, and serum AST levels were evaluated according to their corresponding reagent kits.

The liver samples of the rats were collected, placed in normal saline (1:9, w/v) for homogenization, and then centrifuged at 6000 g and 4 °C for 15 min. The supernatants were then collected and used to analyze the levels of ALT and AST using their corresponding reagent kits.

**Western blot analysis**

Liver tissues of rats in each groups were homogenized on ice in RIPA Lysis Buffer with protease inhibitors, and the supernatant was collected after centrifugation. After assessment of protein concentration in the supernatant with BCA Protein Assay Kit, the quivalent amounts of protein were separated on 6-12% SDS-polyacrylamide gels and transferred to polyvinylidene difluoride membranes. After blocking with 5% non-fat milk for 1 h, the membranes were probed with primary antibodies and followed with peroxidase-conjugated secondary antibodies. Target proteins were visualized with an immunoblotting chemiluminescence reagent.

**Quantitative real-time Polymerase Chain Reaction (PCR)**

Total RNA was extracted using an RNA extraction kit. Approximately 1 μg of total RNA was used for reverse transcription using a first-strand cDNA synthesis kit. RT-qPCR was performed using a ChamQ Universal SYBR qPCR Master Mix. PCR primers were custom synthesized by Guangzhou IGE Technology (Guangzhou, China), and primer information is as follows: IL-6, forward 5′ATGATGGATGCTTCCAAACTG3′ and reverse 5′GAAACGGAACTCCAGAAGACC3′;

iNOS, forward 5′GCATCAGAAATGTTCCAGCA3′ and reverse 5′CTGGGGGAACACAGTAATGG3′; NF-κB, forward 5′CTTCTGATCGGGAGCTCAGT3′ and reverse 5′TCGTAGGTCCTTTTGCGTTT3′; mTOR, forward 5′AAGGAGATGCAGAAGCCTCA3′ and reverse 5′GGATTCGATCATCTCGGTTC3′; LC3B, forward 5′CGGAGCTTCGAACAAAGAGT3′ and reverse 5′CAGCTGCTTCTCACCCTTG3′; GAPDH, forward 5′CTGAGAATGGGAAGCTGGTC3′ and reverse 5′AGCATCACCCCATTTGATGT3′. The amount of mRNA was assayed using quantitative PCR. The amount of each sample was normalized using GAPDH. The assays were performed at least three times. The data obtained from one representative experiment were expressed as means ± standard deviations (SDs).

**Statistical analyses**

All data are presented as the mean ± Standard Error of Mean (SEM) or Standard deviation (SD). Differences between groups were compared by Student’s t-test or Kruskal-Wallis test. A *p* value < 0.05 was considered statistically significant.