Ninety C57BL/6 mice were randomized into sham-operated group, middle cerebral artery occlusion (MCAO) model group, and low-, medium and highdose (10, 20, and 40 mg/kg, respectively) FB groups. The expression levels of MDA, ROS, PCO, 8-OHdG, SOD, GSTα4, CAT and GPx in thebrain tissue of the mice were detected using commercial kits, and those of AMPK, P-AMPK,DAF-16, FOXO3 and P-FOXO3 were detected with Western blotting. Compound C (CC), an AMPK inhibitor, was used to verify the role of the AMPK pathway in mediating the therapeutic effect of FB. In another 36 C57BL/6 mice randomized into 4 sham-operated group, MCAO model group, FB (40 mg/kg) treatment group, FB+CC (10 mg/kg) treatment group, TTC staining was used to examine the volume of cerebral infarcts, and the levels of ROS and SOD in the brain were detected; the changes in the protein expressions of AMPK, P-AMPK, DAF-16, FOXO3 and P-FOXO3 in the brain tissue were detected using Western blotting.

In mice with cerebral IR injury, treatment with FB significantly reduced the levels of ROS, MDA, PCO and 8-OHdG, increased the activities of antioxidant enzymes SOD, GSTα4, CAT and GPx, and enhanced phosphorylation of AMPK and FOXO3 and DAF-16 protein expression in the brain tissue ($P < 0.01$). Compared with FB treatment alone, the combined treatment with FB and CC significantly reduced phosphorylation of AMPK and FOXO3, lowered expression of DAF-16 and SOD activity, and increased cerebral infarction volume and ROS level in the brain tissue of the mice ($P < 0.01$).

FB inhibits oxidative stress injury caused by cerebral I/R in mice possibly by enhancing AMPK phosphorylation, promoting the downstream DAF-16 protein expression and FOXO3 phosphorylation, increasing the expression of antioxidant enzymes, and reducing ROS level in the brain tissue [1].

1)
Chen X, Wang K, Chu D, Zhu Y, Zhang W, Cao H, Xie W, Lu C, Li X. [Forsythiaside B inhibits cerebral ischemia/reperfusion-induced oxidative stress injury in mice via the AMPK/DAF-16/FOXO3 pathway]. Nan Fang Yi Ke Da Xue Xue Bao. 2023 Feb 20;43(2):199-205. Chinese. doi: 10.12122/j.issn.1673-4254.2023.02.06. PMID: 36946038.