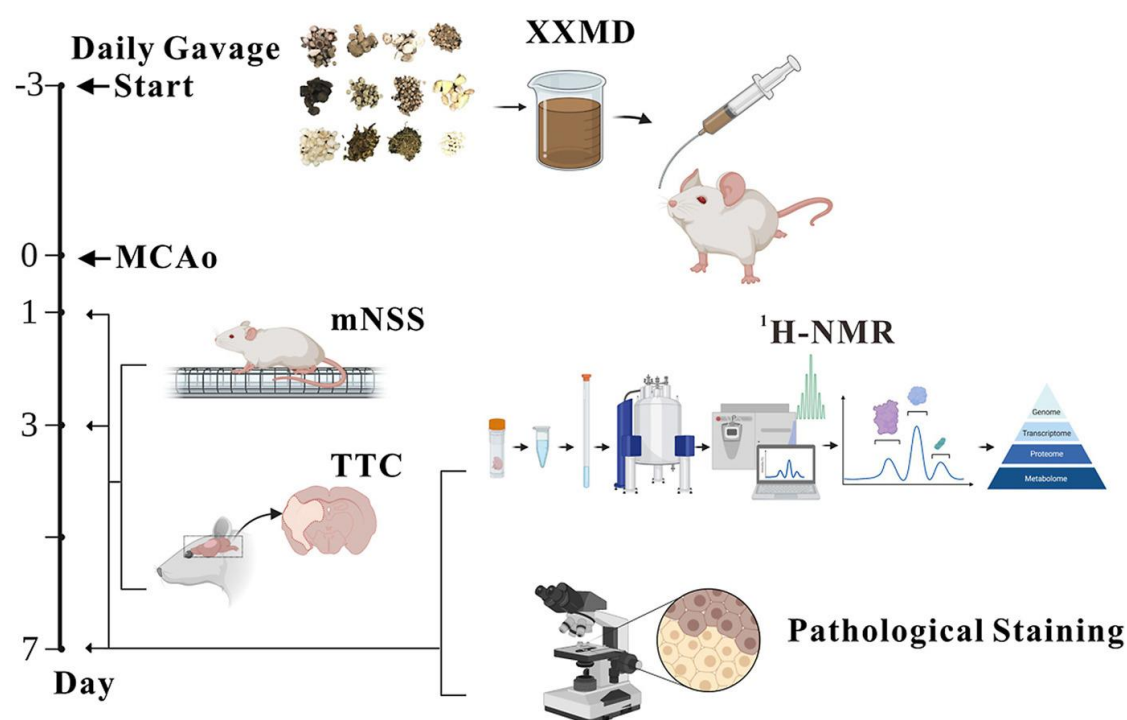


Graphical abstract



Abstract

Ethnopharmacological relevance: Xiao-Xu-Ming Decoction (XXMD) is a classical Chinese medicinal compound for the treatment of ischemic stroke, which has good efficacy in clinical studies and also plays a neuroprotective role in pharmacological studies.

Aim of the study: The purpose of this study is to investigate the potential and integral interventional effects of XXMD on cerebral ischemia/reperfusion rat model.

Materials and methods: In this study, ^1H NMR metabolomics was used, combined with neurological functional assessments, cerebral infarct area measurements, and pathological staining including Nissl staining, immunofluorescence staining of NeuN and TUNEL, and immunohistochemical staining of MCT2, to analyze the metabolic effects of XXMD in the treatment of an ischemia/reperfusion rat model.

Results: It's observed that XXMD treatment could improve the neurological deficit scores and reduce the cerebral infarct areas on cerebral ischemia/reperfusion rat model. The pathological staining results performed that XXMD treatment could improve the decrease of Nissl bodies and the expression of NeuN and MCT2, reduce the high expression of TUNEL. In ^1H NMR study, it revealed that the metabolic patterns among three experimental groups were different, the level of lactate, acetate, NAA, glutamate, and GABA were improved to varying degrees in different brain area.

Conclusion: Our findings indicated that XXMD has positive effect on neuroprotection and improvement of metabolism targeting cerebral ischemic injury in rats, which showed great potential for ischemic stroke.