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The pharmacological investigation of a traditionally fermentation medicine, massa medicata fermentata, in treating digestive system disorders**Jiang Xue**

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China has a long history of applying fermentation in medicine. At the beginning, the fermentation was used for food and alcohols. Gradually, it was used in creating drugs for clinical usage and Massa Medicata Fermentata (MMF) is the typical one which has been applied for thousand years. MMF is used for treating dyspepsia, emesis, diarrhea and other digestive system disorders. MMF is made up of five botanical medicines with a mass of flour through fermentation to produce novel compounds treating digestive system disorders in traditional Chinese medicine. Firstly, the digestive enzyme activities were significantly increased by MMF treatment compared to the same materials without the fermentation process. MMF fermented within 48 hours could increase the spleen cells and intestinal epithelial cell (IEC-6) proliferation, which processes were accompanied with the degradation of originally effective compounds. The principle effective compounds in original medicinal materials, such as rutin, quercetin and xanthatin, decreased and transformed into new compounds by LC-MS analysis. Secondly, a digestive system disorder rat model was created with obvious clinical symptoms. After treatment of MMF, the body weight, food-intake, as well as the thymus index and spleen index in rat's model groups recovered back to a normal level, as well as the enzymes activities (AMY, pepsin, PAMY and trypsin). The secretion of GAS, MLT and the level of D-xylose in rat serum also increased in treatment groups significantly. Thirdly, the diversity of intestinal flora was significantly destroyed in model rat groups and MMF treatment recovered the diversity of intestinal flora to some extent. Conclusively, some novel compounds were derived from the botanical compounds by the fermentation process in MMF. It could significantly increase the digestive enzyme activities and improved the rat model healthy condition. Besides, MMF performed the pharmacological effects through adjusting the diversity of intestinal flora into a normal level in rats.

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