

学 位 論 文 要 旨	
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題 目	Study on quality stabilization of Massa Medicata Fermentata, focused on microbial and physicochemical properties 微生物的及び理化学的特性に着目した神麴の品質安定化に関する研究
<p>Massa Medicata Fermentata (MMF) is a traditional crude drug used for treatment of anorexia and dyspepsia in elders in East Asia. MMF is prepared from apricot kernel, red beans, wheat flour or bran and herb materials such as polygonum, sweet wormwood, and cocklebur. MMF is also used in Japanese Kampo medicine as a component of “<i>Hangebyakujutsutemmato</i>”. Along with the increase in the consumption of <i>Hangebyakujutsutemmato</i>, demand of MMF is also increase in recent years. However, the quality of MMF is significantly different among the manufacture, due to there is no reference standard in quality control. Thus, in this study, we are purpose to establish a basis for quality assessment of MMF by explore of commercial MMF and analysis of MMF prepared under different condition, and expected to establish reference standards for quality control of MMF.</p> <p>We obtained of commercial MMF manufactured in China and Korea, and the digestive enzyme activity, ferulic acid, volatile components and microbial community was analyzed. It was clarified that filamentous fungi such as <i>Aspergillus</i> sp. and <i>Rhizopus</i> sp. were predominate fungi in commercial MMF. The digestive enzyme activities (α-amylase, protease, and lipase), ferulic acid, and 39 volatile components were commonly detected in all samples. Digestive enzyme could contribute to digestion promoting, and ferulic acid and volatile components were expected to have anti-inflammatory and stomachic effects, respectively. These components could contribute to medicinal property of MMF.</p> <p>As results of commercial MMF analysis, it was suggested that microbial differences would affect the quality of MMF. Thus, we prepared MMF by using cultured <i>Aspergillus oryzae</i> and <i>Rhizopus oryzae</i> to clarify the effect of filamentous fungi on MMF quality. MMF prepared by different fungi shown different enzyme activity, ferulic acid contents and volatile compounds. The results indicated that fermentation by filamentous fungi could greatly affects the chemical properties of MMF.</p> <p>Furthermore, we investigated the addition effects of herbs on MMF quality. Herbs were treated into decoction, juice, and powder, then used for MMF preparation. The results shown that ferulic acid content increased with the addition of herbs. The addition of juice and powder inhibited the growth of <i>A. oryzae</i>, and MMF with juice or powder showed lower enzyme activity. In contrast, decoction added MMF showed higher enzyme activity, which was equivalent to the MMF without the herbs. Therefore, the use of decoction seems to be optimal for the stable production of MMF.</p> <p>In this study, we clarified the microbial and chemical characteristic of commercial MMF, and differences in filamentous fungi and the addition of herbs affected MMF quality. Our study could contribute to establish a reference standard and promote the quality stabilization for MMF.</p>	