

## Microwave-irradiation Effect on Extraction of Ginseng

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Microwave has been known to heat dielectric materials, especially water, inside and outside very rapidly and causing cell wall rupture leading to faster mass transfer of inner cell materials. In this study, Korea ginseng was subjected to microwave irradiation followed by usual extraction process but with shorter time span. The frequency of the microwave is 2450MHz and the polarization of the microwave is defined. The concentration of the main health benefit components of red ginseng, so called panax ginsenosides, were measured with high performance liquid chromatograph to study the effect of the microwave on the transient extraction process. The water sorption and swelling of red ginseng together with the extraction of ginsenosides were measured to investigate the microwave effect. To promote uniform microwave energy absorption, we also performed numerical simulations of microwave propagation, reflection, and absorption in the chamber and prepared optimized radiation energy absorption environment for the Korea ginseng. The microwave of proper electromagnetic environment has been shown to substantially improve the extraction process.