

## Effect of Ultrasound and Enzyme on the Extraction of *Eurycoma longifolia* (Tongkat Ali)

**Authors :** He Yuhai, Ahmad Ziad Bin Sulaiman

**Abstract :** Tongkat Ali, or *Eurycoma longifolia*, is a traditional Malay and Orang Asli herb used as aphrodisiac, general tonic, anti-Malaria, and anti-Pyretic. It has been recognized as a cashcrop by Malaysia due to its high value for the pharmaceutical use. In Tongkat Ali, eurycomanone, a quassinoid is usually chosen as a marker phytochemical as it is the most abundant phytochemical. In this research, ultrasound and enzyme were used to enhance the extraction of Eurycomanone from Tongkat Ali. Ultrasonic assisted extraction (USE) enhances extraction by facilitating the swelling and hydration of the plant material, enlarging the plant pores, breaking the plant cell, reducing the plant particle size and creating cavitation bubbles that enhance mass transfer in both the washing and diffusion phase of extraction. Enzyme hydrolyses the cell wall of the plant, loosening the structure of the cell wall, releasing more phytochemicals from the plant cell, enhancing the productivity of the extraction. Possible effects of ultrasound on the activity of the enzyme during the hydrolysis of the cell wall is under the investigation by this research. The extracts was analysed by high performance liquid chromatography for the yields of Eurycomanone. In this whole process, the conventional water extraction was used as a control of comparing the performance of the ultrasound and enzyme assisted extraction.

**Keywords :** ultrasound, enzymatic, extraction, *Eurycoma longifolia*

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