

## **Marker to authenticate *Eurycoma longifolia* (Tongkat Ali) containing aphrodisiac herbal products**

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### **ABSTRACT**

The benefits of *Eurycoma longifolia* (Tongkat Ali, TA) for its aphrodisiac capabilities are well known and many products are marketed worldwide. Due to its popularity, the plant is being abused for promoting fake products. Therefore, there is a need for better testing of the markers required by authorities and responsible manufacturers. A low-molecular-weight protein has been studied for developing it as a testing marker. Two dimensional electrophoresis (2DE) (four spots were observed) was used for positive detection of proteins in an aqueous extract of TA root and the pronounced separation of a Coomassie-stained spot, subsequently referred to as Marker A. Consecutive chromatographic separations of the aqueous extract of TA led to the isolation of pure protein from Marker A. When this marker was used to test 46 TA-based products randomly selected from markets worldwide, in 20 of them, the results were found to be comparable to those obtained using the organic eurycomanone marker. The ranking of products from the highest quantity to the lowest observed to be ordered differently if compared for both markers. This is an expected outcome because Marker A was measured for its protein content and eurycomanone for its organic molecule. Marker A detection using 2DE is shown to be a useful tool to test products supplemented with *E. longifolia* root.

### **KEYWORDS:**

Authentication, electrophoresis, *Eurycoma longifolia*, herbal products, markers.