

Different Functions and Expression Profiles of Curcin and Curcin-L in *Jatropha curcas* L.

Xiaobo Qin^a, Caixia Shao^a, Pei Hou^a, Jihai Gao^a, Ningfei Lei^b, Luding Jiang^a, Shengliang Ye^a, Chunbao Gou^a, Shaoyin Luo^a, Xiaojiang Zheng^a, Xiaoping Gu^a, Xihong Zhu^a, Ying Xu^a, and Fang Chen^{a,*}

^a College of Life Sciences, Sichuan University, Chengdu 610064, P. R. China.

Fax: + 86 28 85 41 72 81. E-mail: qin_ever@hotmail.com or chenfang@scu.edu.cn

^b College of Materials and Chemistry & Chemical Engineering, Chengdu University of Technology, Chengdu 610059, P. R. China

* Author for correspondence and reprint requests

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To date, two types of ribosome-inactivating proteins (RIPs) have been found in *Jatropha curcas*. One is curcin, which has been isolated from the endosperm, and the other is curcin-L, which is expressed in leaves upon stress treatment. Phylogenetic analysis of the predicted amino acid sequences of the RIPs in plants revealed that these belong to a major subfamily and are close to trichosanthin (TCS). Studies on the mRNA and protein levels showed that both curcin and curcin-L have an organ-specific expression pattern. Curcin is only expressed and accumulated in the endosperm; its expression begins in the globular embryo period and peaks during the mature embryo period. In contrast, curcin-L is only expressed in the leaves, but its expression is induced by certain conditions such as treatment with phytohormones or polyethylene glycol, exposure to high and low temperatures, and fungal infection. Analysis of the 5' flanking regions of curcin and curcin-L revealed that the 5' flanking region of curcin-L has three major inserted fragments, which are not present in the corresponding region of curcin. Comparison of characteristic *cis*-elements suggests the presence of several motifs that are involved in the endosperm-specific expression in the 5' flanking region of curcin, while in curcin-L some stress- and defense-responsive motifs are found to be mainly located in the three inserted fragments. Comparison of the antifungal activity of the two RIPs showed that the one of curcin-L is higher than that of curcin. Differences in the expression and activity of curcin and curcin-L suggest that these two RIPs have different functions.

Key words: *Jatropha curcas* L., Ribosome-Inactivating Protein, Antifungal Activity