ESTROGENIC ACTIVITY OF THE FIELD-GROWN WHITE KWAO KRUA (*Pueraria mirifica*) EVALUATED BY A YEAST ESTROGEN SCREEN (YES) METHOD

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ABSTRACT

Recently, an indigenous herb of Thailand namely white Kwao Krua (*Pueraria mirifica*), has aroused high interest because it exerts estrogenic-like activity. This plant has been used as a folk medicine for rejuvenation in menopausal women. A previous study has demonstrated that the amount of phytoestrogens in *P. mirifica* depend on age of plant and place of cultivation. This study aims to investigate the influence of harvest season, plant genetics and propagation method, on estrogenic activity in plant tubers. Five field-grown cultivars were used in this study and their estrogenic activities were evaluated by yeast estrogen screen (YES) with human estrogenic receptor α (YES-hERα) and human estrogenic receptor β (YES-hERβ). The estrogenic activity of *P. mirifica* was relative to that of 17β-estradiol, expressed as a relative potency. It was demonstrated that the harvest season influenced estrogenic activity as evaluated by both YES systems. Furthermore, the level of estrogenic activity was depended on plant genetics, whereas propagation method by seed and cutting had no influence on estrogenic activity in one representation plant cultivar. In addition, the temperature, amount of rainfall at the place of cultivation, the individual and the total isoflavonoid contents had slightly effect on estrogenic activity of plant extracts differently in each cultivar. Moreover, the sensitivity of the YES method was improved by knocking out PDR5 gene of yeast strain. This revealed that the EC50 of Δpdr5 YES-hERα and Δpdr5 YES-hERβ were approximately half of that of the wild type YES strain. This study provides information for selection of the best *P. mirifica* cultivar and harvesting time in order to obtain suitable amounts of the estrogenic compound for further applications.

KEY WORDS: *S. cerevisiae/ YEAST ESTROGEN SCREEN/ WHITE KWAO KRUA/ PHYTOESTROGENS/ Pueraria mirifica*

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