

Integrated research on *Kaempferia parviflora* for development of health products

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Abstract

Integrated research is a crucial platform in the success of product development of herbs. Accordingly, the scientific evidence to provide the pharmacological data as traditional claim suggests the health benefit and further steps of suitable product design and clinical trial of the potential medicinal plant. During the pass decade, our research center has continuously been supported to organize the research network on Thai plant namely Krachidum or *Kaempferia parviflora*. *K. parviflora* is a traditional medicine that has been widely used as the health promoter among the mountain people of Thailand. Several pharmacological activities of the plant rhizome extract were reported, which include ant-inflammation, immunomodulation, antimicrobials, improvement of blood fluidity and increment of blood flow, antihypercholesteremic, antobesity, improvement of the quality of life, antistress and enhancement of the physical endurance. Therefore, nutraceutical products are potentially developed from the plant rhizome. Although the products in the forms of tea, wine, capsule are available in the market, but the product efficacy is still the concerned issue of the consumer. The pharmacokinetic parameters of three major compounds of plant, which are 5,7-dimethoxyflavone (DMF), 5,7,4'-trimethoxyflavone (TMF) and 3,5,7,3',4'-pentamethoxy-flavone (PMF) have been investigated. The results demonstrated the detectable levels of AUC, Cmax, Tmax, $T_{1/2}$ and several target tissues distribution of these three compounds, but with their low bioavailability, suggesting the low absorption of these compounds in the intestinal trace. The nano carriers containing the plant extract in the forms of cyclodextrin complex and self microemulsifying drug delivery system (SMEDDS) were successfully developed to increase these methoxyflavone bioavailability. Clinical trials of *K. parviflora* capsule demonstrated the positive modulation effect on health-related physical fitness in healthy elderly volunteers and the improvement of muscle endurance in soccer players. Moreover, *K. parviflora* capsule also enhanced parameters related to erectile dysfunction in healthy elderly volunteers.

Keywords: *Kaempferia parviflora*, nutraceutical products, antihypercholesteremic, antobesity, antistress

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