Abstract

In the fiscal year 2016, the project “the research and further development of local wisdom from herbal plants” aims at investigating the pharmacological and toxicological effects of herbal plants in the highland that that have potential for developing as local and commercial products. The potential herbal plants were selected to draw up specification, prepare the extracts and study the tonix effects on sexual competency and cardiovascular systems. Furthermore, the effecs on detoxification and acute and chronic toxicity of herbal plants in detox group were also evaluated to be a guideline for developing these highland herbal plants as a commercial products afterwards. Our study demonstrated that there were 4 herbs been selected in the group of rejuvenating herbs for men including *Elephantopus scaber* L., *Aspidistra elatior* Blume, *Limacia triandra* Miers and *Mucuna macrocarpa* Wall. and 2 herbs including *Pseuduvaria rugosa* (Blume) Merr and detoxification formula. These herbal plants were specified in the 5 kinds of herbal plants which were additional listed from 2015 and were also evaluated their quality by following the Thai Herbal Pharmacopoeia. Each sample was extracted by reflux by water followed traditional decoction and then concentrated by spray drying. Preparation of herb/remedy extract was performed for pharmacological testing and toxicity studies in aminals.

Study of sexual behavior in male rats was performed using three doses of *Elephantopus scaber L.* extract at 357, 714 and 1,428 mg/kg bw. and that of *Aspidistra elatior Bl.* extract at 107, 214 and 428 mg/kg bw. The results found that *Elephantopus scaber L.* extract *at* 1,428 mg/kg bw. and *Aspidistra elatior Bl.* extract at 428 mg/kg bw. likely increase the behavior of straddle on female with no change on testosterone levels in the animal blood.

Study of cardiovascular effect by giving *Elephantopus scaber L.* extract and *Aspidistra elatior Bl.* extract at 20, 40 and 80 mg/kg bw. found both extracts can decrease the blood pressure and the heart rate in similar to reference drug sildenafil, but in a short period of time.

Study of anti-pesticide activity found the third giving pattern of *Pseuduvaria rugosa* (Blume) Merr at the dose of 750 and 250 mg/kg bw. and the second pattern of detoxifying recipe extract at 400, 200, and 60 mg/kg bw. as well as the third pattern of the detoxifying extract at 800, 400 and 120 mg/kg bw. had anti-pesticide activity which is better than other doses of extracts. No changes in the body weight and the weights of liver and kidney were noticed. The liver function was found to be

close to that of normal rats. In addition, the level of free radical MDA was decreased, but the antioxidant GSH level increased. The AChE activity was also similar to the normal level. Pathological study showed both extracts have hepatoprotective effect with no presence of hepatic necrosis.

Study of acute and sub-chronic effects found the extracts of *Pseuduvaria rugosa* (Blume) Merr and of detoxifying recipe at 5,000 mg/kg bw. did not cause acute toxicity in animals. In addition, our study found that three series of *Pseuduvaria rugosa* (Blume) Merr doses (7.5 mg/kg and 2.5 mg/kg; 75 mg/kg and 25 mg/kg; and 750 mg/kg and 250 mg/kg) and three series of detoxifying remedy doses (1,200, 100, and 30 mg/kg; 400, 200, and 60 mg/kg; and 800, 400, and 120 mg/kg) had no toxicity in the long-term.

According to the result data in 2014-2015, the herbs in the group of detoxification with have tendency to use for health were selected for the development of products. The chosen herbal recipe consisted of *Thunbergia coccinea* Wall.ex D.Don, *Morinda angustifolia* Roxb. var. *angustifolia*, Bab-Loi-Woi (*Litsea* sp.) and *Thunbergia laurifolia* Lindl. Moreover, *Pseuduvaria rugosa* (Blume) Merr., as the single herb, was chosen for studying the product development. Commercial products that use advanced technology for production such as products of concentrated extracts in the forms of granule, tablet and capsule.