Abstract

Prasaprohyai preparation has been used in Thai traditional medicine preparation to treat colds, asthma and fever. It consists of nineteen medicinal plants. They are *Amomum testaceum* Ridl. (fruit), *Anethum graveolens* L. (fruit), *Angelica dahurica* Benth. (root), *Angelica sinensis* (Oliv.) Diels (root), *Artemisia annua* L. (all part), *Atractylodes lancea* (Thunb.) DC. (rhizome), *Cuminum cyminum* L. (fruit), *Dracaena loureiri* Gagnep. (stem), *Foeniculum vulgare* Mill. var. *dulce* (Mill.) Thell. (fruit), *Kaempferia galanga* L. (rhizome), *Lepidium sativum* L. (seed), *Ligusticum sinense* Olive. cv. Chuanxiong (rhizome), *Mammea siamensis* Kosterm. (flower), *Mesua ferrea* L. (flower), *Mimusops elengi* L. (flower), *Myristica fragrans* Houtt. (stem, aril, seed), *Nelumbo nucifera* Gaertn. (pollen), *Nigella sativa* L. (seed) and *Syzygium aromaticum* (L.) Merr. et Perry (flower-bud). The objectives of this study were to study the antioxidant activity, anti-inflammatory activities and anti-allergic activity of Prasaprohyai preparation and its ingredients. They were divided two parts. One part was extracted by macerating in 95% ethanol (Et), the residue of this extracts were boiled in water (EW) another part was boiled in water (HW). The methods of extraction were imitated from Thai traditional medicine books. These extracts were examined for their antioxidant activity using DPPH assay, anti-inflammatory assay by determination inhibitory activities against lipopolysaccharide (LPS) induced nitric oxide (NO) production and TNF-α release in RAW 264.7 cell lines using Griess reagent, and anti-allergic activity by inhibitory activity on the release of β-hexosaminidase from RBL-2H3 cells.

The results indicated that the ethanolic (Et), the water extracts from residue of ethanolic extract (EW) and water extract (HW) of *Syzygium aromaticum* showed the highest antioxidant activity (EC_{50} = 6.56, 4.73 and 5.30 μg/ml, respectively). The results found that the ethanolic extract of *Atractylodes lancea* exhibited the most potent anti-inflammation by inhibitory activity against lipopolysaccharide (LPS) induced nitric oxide (NO) production in RAW 264.7 cells, with an IC_{50} value of 9.70 μg/ml, followed by the ethanolic extract of *Angelica sinensis* and *Cuminum cyminum* (IC_{50} = 12.52 and 13.56 μg/ml, respectively). The ethanolic extract of Prasaprohyai formula exhibited the inhibitory activity with IC_{50}

value of 18.40 μg/ml. The results also found the ethanolic extracts of *Cuminum cyminum*, Prasaprohyai formula and *Atractylodes lancea* exhibited a strong TNF-α inhibitory activity (IC_{50} = 7.95, 20.34 and 24.35 μg/ml, respectively). The ethanolic extract of *Mammea siamensis* was also found to exhibit the most potent anti-allergic effect against antigen-induced β-hexosaminidase release as a marker of degranulation in RBL-2H3 cells, with an IC_{50} value of 7.90 μg/ml, followed by the ethanolic extract of *Dracaena loureiri* and *Myristica fragrans* (Mace) (IC_{50} = 10.67 and 11.65 μg/ml respectively). The ethanolic extract of Prasaprohyai formula exhibited the inhibitory activity with IC_{50} value of 16.59 μg/ml. The water extract (EW, HW) of all plants were apparently inactive in anti-inflammatory and anti-allergic activities.

In conclusion, the ethanolic extract of Prasaprohyai preparation showed anti-allergy and anti-inflammatory effect by reducing nitric oxide. The active plant extracts are the ethanolic extract of *Atractylodes lancea* and *Mesua ferrea* as the active ingredients for anti-allergy, antioxidant and anti-inflammation. These results can support using these Thai medicinal plants for treatment of fever, cold, allergy-related diseases and inflammatory-related diseases.

Future study should be continued to isolated active compounds from *Atractylodes lancea* and *Mesua ferrea* and isolated pure compounds from the plants which exhibited the highest each activity by bioassay guide isolation method. Their active ingredients should be markers for analysis and determination of the stability of Prasaprohyai preparation.