

Selected Orthosiphon sp. Published Scientific References

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Antioxidant and hepatoprotective effects of Orthosiphon stamineus Benth. standardized extract.

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Orthosiphon stamineus (OS), Benth. (Lamiaceae) is widely used in Malaysia for treatments of various kidney and liver ailments. In the experiment, DPPH* radicals scavenging, Fe(3+)-induced lipid peroxidation inhibiting activities and trolox equivalent antioxidant capacity (TEAC) of methanol/water extract of Orthosiphon stamineus (SEOS) were determined. The results indicated that SEOS exhibited antioxidant, lipid peroxidation inhibition and free radical scavenging activities. The hepatoprotective activity of the SEOS was studied using CCl₄-induced liver toxicity in rats. The activity was assessed by monitoring liver function tests through the measurement of alanine transaminase (ALT) and aspartate transaminase (AST). Furthermore, hepatic tissues were also subjected to histopathological studies. Pretreatment of SEOS (125, 250, 500 and 1000 mg/kg p.o.) dose-dependently reduced the necrotic changes in rat liver and inhibited the increase of serum ALT and AST activities. The results of the present study indicated that the hepatoprotective effect of Orthosiphon stamineus might be ascribable to its antioxidant and free radical scavenging property.

PMID: 17265556

J Ethnopharmacol. 2007 Feb 12;109(3):510-4. Epub 2006 Sep 5.

Effects of Orthosiphon stamineus aqueous extract on plasma glucose concentration and lipid profile in normal and streptozotocin-induced diabetic rats.

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The objective of this study was to investigate the effects of Orthosiphon stamineus Benth. aqueous extract on plasma glucose concentration and lipid profile in normal and streptozotocin-induced diabetic rats. The chemical screening of the extract showed phenolic compound and flavonoid content were 13.24±0.33 mg/g and 1.73±0.14 microg/g, respectively. In oral glucose tolerance test, the extract (0.2-1.0 g/kg) significantly decreased plasma glucose concentration in a dose-dependent manner in both normal and diabetic rats. The extract at 1.0 g/kg was most effective in decreasing plasma glucose concentrations and the response was closed to the result of glibenclamide (5 mg/kg). After repeated daily oral administrations of the extract (0.5 g/kg) for 14 days, the extract significantly reduced plasma glucose concentration in diabetic rats at days 7 and 14. By the end of the study, plasma triglyceride concentration was lower in the extract-treated diabetic rats than untreated ones. Furthermore, plasma HDL-cholesterol concentration was significantly increased in diabetic rats treated with the extract. In perfused rat pancreas, the extract did not increase insulin secretion in the presence of 5.5 mM glucose, but 100 microg/ml extract potentiated glucose-induced insulin secretion. Our findings suggested that Orthosiphon stamineus aqueous extract is effective for alleviating hyperglycemia and improving lipid profile in diabetic rats.

PMID: 17034971

J Pharm Biomed Anal. 2003 Sep 15;33(1):117-23.

Phytochemical and pharmacological studies on Orthosiphon stamineus Benth. (Lamiaceae) hydroalcoholic extracts.

Olah NK, Radu L, Mogosan C, Hanganu D, Gocan S.

The main components of *Orthosiphon stamineus* Benth. leaves and extracts are the pharmacologically active polyphenols: the polymethoxylated flavonoids and the caffeic acid derivatives. Two tinctures, having different alcohol concentration, were studied from phytochemical and pharmacological point of view. The main polyphenols were identified and quantitatively determined by HPLC. Comparison of the retention parameters and UV-Vis spectra of standards and those of the separated compounds performed the identification of caffeic-, cichoric- and rosmarinic acids, respectively, of sinesetine and eupatorine. The quantitative determination was performed by external standard method. The diuretic, saluretic and uricosuric actions of the studied tinctures were compared by experiments on rats.

PMID: 12946538

Curr Top Med Chem. 2003;3(2):227-48.

Chemical constituents and biological activities of Vietnamese medicinal plants.

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Department of Natural Products Chemistry, Institute of Natural Medicine, Toyama Medical and Pharmaceutical University, 2630-Sugitani, Toyama 930-0194, Japan. Every country has its own traditional medicine system originated from ancient times. Vietnam, a Southeast Asian country, has a unique traditional medicine system. Several medicinal plants are still used by different ethnic societies of Vietnam for treating several diseases due to their easy availability. *Combretum quadrangulare*, *Panax vietnamensis* (Vietnamese Ginseng), *Dracaena angustifolia* (Nam Ginseng) and *Orthosiphon stamineus* are among the popular medicinal plants used in Vietnamese traditional medicine for curing various diseases and to improve physical strength. In this review article, we discuss the chemical analysis as well as biological activities of these Vietnamese medicinal plants in order to establish the relation between their therapeutic uses and scientific findings.

PMID: 12570775

Southeast Asian J Trop Med Public Health. 2001 Sep;32(3):654-60.

A long-term study on the efficacy of a herbal plant, *Orthosiphon grandiflorus*, and sodium potassium citrate in renal calculi treatment.

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The study was performed to compare the efficacy of a herbal plant, *Orthosiphon grandiflorus* (OG), and the drug sodium potassium citrate (SPC) in treatment of renal calculi. Forty-eight rural stone formers identified by ultrasonography were recruited and randomly assigned to two treatment groups (G1 and G2). For a period up to 18 months, subjects in G1 received 2 cups of OG tea daily, each tea cup made from an OG tea bag (contained 2.5 g dry wt), and G2 received 5-10 g of granular SPC in solution divided into three times a day. Once every 5 to 7 weeks, subjects were interviewed, given an additional drug supply, administered a kidney ultrasound and had spot urine samples collected for relevant biochemical analysis. From the recorded ultrasound images, rates of stone size reduction per year (ROSRPY) were calculated. The mean ROSRPY was 28.6+/-16.0% and 33.8+/-23.6% for G1 and G2, respectively. These two means were not significantly different. ROSRPY values of G1 and G2 were combined and divided into three levels: Level A (ROSRPY > mean + 0.5 SD), Level M (ROSRPY = mean +/- 0.5 SD) and Level B (ROSRPY < mean - 0.5 SD). Dissolution of stones was

least in Level B which was related to higher excretions of Ca and uric acid in the urine. After treatment, 90% of the initial clinical symptoms (ie back pain, headaches and joint pain) were relieved. Fatigue and loss of appetite were observed in 26.3% of G2 subjects. Our study indicates that treatment of renal calculi with OG tea is an alternative means of management. Further investigation is needed to improve dissolution of stones with a low ROSRPY.
PMID: 11944733

Yakugaku Zasshi. 2000 May;120(5):474-82.

Antihypertensive substance in the leaves of kumis kucing (*Orthosiphon aristatus*) in Java Island

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The water decoction of leaves of kumis kucing, *Orthosiphon aristatus* (BL.) MIQ (Lamiaceae) which has been prescribed in Javanese traditional medicine (jamu) for the treatment of hypertension etc., was partitioned into a mixture of chloroform and water. The chloroform-soluble portion showed an inhibitory effect on the contractile responses on rat thoracic aorta smooth muscle stimulated with KCl beforehand, while the water-soluble portion showed no effect. The chloroform-soluble portion was separated to afford a new benzochromene [orthochromene A (7)], two new isopimarane-type diterpenes [orthosiphonone A (10), orthosiphonone B (11)], and two novel migrated pimarane-type diterpenes [neoorthosiphol A (12), neoorthosiphol B (13)], together with eight known compounds (1-6, 8, 9). Among those thirteen substances, it was found that a major constituent in the water decoction of leaves, methylripariochromene A (5), exhibited a continuous decrease in systolic blood pressure after subcutaneous administration in conscious stroke-prone spontaneously hypertensive rats (SHRSP).

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Biol Pharm Bull. 1999 Oct;22(10):1083-8.

Antihypertensive actions of methylripariochromene A from *Orthosiphon aristatus*, an Indonesian traditional medicinal plant.

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Methylripariochromene A (MRC) was isolated from the leaves of *Orthosiphon aristatus* (Lamiaceae) and subjected to the examination of several pharmacological actions related to antihypertensive activity. The following four findings were revealed from the present study: 1) MRC caused a continuous decrease in systolic blood pressure and a decrease in heart rate after subcutaneous administration in conscious male SHRSP, 2) MRC exhibited the concentration-dependent suppression of contractions induced by high K⁺, l-phenylephrine or prostaglandin F₂α in endothelium-denuded rat thoracic aorta, 3) MRC showed a marked suppression of contractile force without a significant reduction in the beating rate in isolated bilateral guinea pig atria, and 4) MRC increased urinary volume and the excretion of Na⁺, K⁺ and Cl⁻ for 3 h after oral administration with a load of saline in fasted rats. These findings indicate that MRC possesses some actions related to a decrease in blood pressure, i.e. vasodilating action, a decrease in cardiac output and diuretic action. Furthermore, it is presumed that the traditional use of this plant in the therapy of hypertension may be partially supported by these actions with MRC.

PMID: 10549860

Phytother Res. 1999 May;13(3):222-5.

Effect of extracts of Orthosiphon stamineus Benth, Hieracium pilosella L., Sambucus nigra L. and Arctostaphylos uva-ursi (L.) Spreng. in rats.

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Aqueous extracts of Sambucus nigra and Arctostaphylos uva-ursi and hydroalcohol extracts of Orthosiphon stamineus and Hieracium pilosella were tested for their diuretic activities in rats; pharmacological evaluation revealed that they led to an increase in urine flow. Urinary sodium excretion in rats was increased with O. stamineus and S. nigra.

PMID: 10353162

Planta Med. 1992 Jun;58(3):237-8.

Diuretic action of aqueous Orthosiphon extract in rats.

Englert J, Harnischfeger G.

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An aqueous extract of Orthosiphonis folium, given orally, enhances considerably ion excretion in rat to a level comparable to that obtained with furosemide. No aqueretic action is observed. The increased ion excretion is not due to the potassium content of the starting material.

PMID: 1409978

J Med Assoc Thai. 1991 Jun;74(6):318-21.

Effects of Folia orthosiphonis on urinary stone promoters and inhibitors.

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Yaa-Knuatmaeo or Folia orthosiphonis showed both favourable and non favourable effects of stone prevention. Uric acid and uric acid containing stone may be prevented by the increased alkalinity of the urine after drinking Orthosiphon tea. The unfavourable effect of orthosiphon being the excretion of oxalate in the urine may result in higher risk of stone formation. However, this study may or may not apply to the stone patients since it has been done only on healthy persons and all parameters were within normal limits. We feel that Orthosiphon tea may be beneficial in prevention of uric acid stone formation. This study was supported by a grant from the Medicinal Herbs Development Fund, Mahidol University.

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