

New natural drugs in Korea

Chang Soo Yook

Dep.of Oriental pharma. science, college of pharmacy, KyungHee
University,

¹⁾Hoeki-dong, Dongdaemoon-Gu, Seoul 130-701

1. Resources of natural drugs (=herbal medicine) in Korea

Preservation of natural source in the world has been a big issue to be discussed. Even though a lot of work has been tried, many plants and animals has been disappeared every year.

Cultivation of medical plants has not been studied extensively, comparing with the demand of natural drugs in 2000 era. The author has organized and classified the plants which have uncertain origin and which has been studied for medical resources. Folk medicine, medical plants, and other natural resources which have been used since 1965 in Korea have been classified as following: 142 family, 437 genus, 723 species, 2 subspecies, 211 varieties, 1 subvariety and 26 forma.

Table I. Classification of medicinal plants in Korea.

Classification	family	genus	species	sub-sp	variety	sub-var.	forma	total
Cryptogamae	20	34	43		2			45
Phanerogamae								
Gymnospermae	6	9	14		3			17
Angiospermae								
Monocotyledoneae	19	58	71		18			89
Dicotyledoneae								
Archichlamydeae	70	227	406	1	132	1	16	556
Metachlamydeae	27	109	185		54		4	243
	142	437	719	1	209	1	20	950
Total					950			

1971. 12. Ryu, Yook, et al

1) *Acanthopanax divaricatus* Seemann var. *albeofructus* C. Yook et T. Kim

Deciduous broad-leaved trees, blanches with spinose; leaves palmately compound 5-foliolate, the leaflets 3-5, narrowly oblong, 6.5-9.5cm, 3-4.5cm wide, acuminate, glabrous on upper side, minute hairs on midrib on lower side, leaf margins doubly serrate, the petioles 4.5-8.0cm long, with small spur 1-1.5mm long, the spurs toward lower, 1-1.6mm long, 4-6mm height; umbles terminal; flowers purple, the pedicels 4-6mm long, rather long pedicel, the beginning, pedicles and fruits compactly wrapped white hairs, when fallen, the reddish brown styles, 2.0-2.1mm long, connate, the stigma center slightly depressed, fruits outside black, long-elliptical, white hairs densely keep to late, 0.7cm wide, 0.9-1.1cm long; the whole shape alike *Acanthopanax divaricatus* but glabrous the upper and lower sides of leaves, peduncles, pedicels, immature fruits densely white hairs, stigma form different, therefore classified and named as a new variety.

Hab: Kwang-Rung, Mun-san, An-Sung, Kyung Ki Do and Mt. Pa-Pyung San, about 200-250m above sea level

Leg: C. Yook, O. Oh, (10, Jul-Aug. 1993)

Type in herbarium, Kyung Hee University (Fig. 1)

2) *Eleutherococcus senticosus* Maxi. var. *tristigmatus* C. Yook

Deciduous scrub with a little branches, main stem growing straightly; a first-year stem showing brown and relatively smooth, a second-year stem showing gray brown and lenticels dotted vertically, big thorns on stem, the end of thorn is sharp and about 20mm wide, 5-6mm long; leaves, palmately compound, 3-5 foliate; leaflets, elliptic or oblong, leaf apices, acuta rarely acuminate, hairs on the surface of leaflets but fallen off partially on maturity.

Flowers; purple, blooming on July-August, five-splited on the top, five petals, stamens longer than petals; fruits, drupe, globular, black-ripened on October, brilliant outside, 0.8-1.2cm long seeds, two in each fruit,

half-mooned shape, pale yellow outside, about 0.31-0.35cm wide, about 0.7cm long, sealed line on abdominal side. The pedicels 0.7-1.5mm long; fruit globose, about 6-8mm, across, black, styles connate the full length, tristigmatis at apex(stigma).

Hab: Ha-Dong, Baek-Un, Chun-Nam and Mt. Chii-San, about 700-1200m above sea level

Leg: C. Yook and O. Oh(10 August 1993)

Type in herbarium, Kyung Hee University(Fig. 2)

3) *Eleutherococcus divaricatus* Seeman *sutchuenensis* C. Yook et S. Ro

Shrub, branches with broadened prickles (base 0.9-1.1cm, height 0.5-0.62cm), the end of thorn is sharp, a first year stem showing gray-brown and lenticels dotted vertically, leaves: palmately compound 3-5 foliate (length 7.0-12.0cm, width 2.5-5.5cm), leaflets, elliptic or oblong, leaf apices, acute rarely acuminate, densely hair of lower surface attached to the end of branches separately, also blooming in lower parts of branches; flowers, yellowish green, blooming on July-August, peduncle(2.5-3.2cm) long, pedicel(length 2.2-2.5cm) with a number of massed hair, 55-62 of total pedicels numbers, cup-shaped green calyx, five splitted on the top, five petals, stamens longer than petals, fruit: drupe globular, black-ripened October, brilliant outside 0.85-1.1cm long, width 0.7-0.8cm, unripened fructus covered with pubescent near calyx-teeth(covered with white densely hair), styles(0.2-0.35cm) connate the full length, slightly bifid at apex (or style and stigma is Y type)

Hab: Wa-Yong-San, Kyung Nam and Mt. Wa-Yong, about 50-100m above level

Leg: C. Yook, S. Ro, Y. Kim, D. Kim and S. Park(30. July-August 1997)

Type in Herbarium Kyung Hee University(Fig.3)

4) *Acanthopanax pedunculus* D. Han et S. Yook sp.nov.

Shrub; branches with broadened prickles, leaves 5-foliolate, the petioles 3-7cm, long, shorter than to as long as the leaflets, often short-prickly, the leaflets ovate or obovate-oblong, 6-11cm, long, 2-6cm, wide acuminate to acute, purplish flower of umbell, many-flowered, pedunculus with acrosed, the pedicles 3-8mm, long; fruit globose, styles connate the full length.

Hab: Chiisan, Chun Nam, Dug-usan, Chun Buk, about 300-1400m above level

Leg: D. R. Han, C. S. Yook, J. Y. Leem(25 August 1985)

Type in Herbarium Oriental pharma. science, college of pharmacy, Kyung Hee University(Fig.4)

2. Key of *Acanthopanax* spp. and *Eleutherococcus* spp.

The Korean Araliaceae family includes 10 genus. Among them *Acanthopanax* and *Eleutherococcus* includes 17 kinds consisting of 11 species, three variety and three forma. For the thousands of years, the valuable tonics properties of *Eleutherococcus*(Root Bark) have protected people from undoubtedly a health-promoting medicinal herbs. The key of *Acanthopanax* species is classified into as show on the following items:

1. Simple leaf.

2. Compound leaf.

2. No pedicel, flower is purplish colour.

Acanthopanax sessiliflorus

2 Flower is greenish yellow color.

A. forma chungbuensis

2. No pedicel, flower is purple color, there are small thorn of midrib and petiole.

A. chiisanensis

2. Stigma is divided into 3 part.

A. seoulense

3. There are long thorn, just like needles type, long pedicel.

A. senticosus

3. There are needles of petiole, and inflorescence are longer than E. senticosus

A. asperatus

3. There are no needle type, the thorn is big.

A. senticosus var. subinermis

4. There are thick hair on junction of midrib on back of leaf

A. koreanum

4. There are no hair on junction of midrib and flower stalk is longer than petiole.(Style is divided into 5-7 part)

A. sieboldianum

5. The flower is purplish color, long pedicel, there are shrunk hair in grey-brown on back of leaf and densely hair on new branch, style is short.

A. divaricatus

5. Flower is greenish yellow color.

A. divaricatus for. flavi-flos

6. The flower is purplish color, short pedicel(4-7mm), short fruit, a lot of hair of back leaf.

A. divaricatus f. nambuensis

6. There are many whiteish hair in the pedicel and fruits.

A. divaricatus var. aleofructus

6. Flower is purplish color, long pedicel, bigger prickle,

i) stigma is divided into two parts = *A. divaricatus f. distigmatis*

ii) stigma is divided into three parts = *A. divaricatus f. tristigmatis*

7. Inflorescence is typical type(crossed bond type).

A. pedunculus

7. Flower is greenish yellow, umbell flowers are big, pedicel is long and has a dense hair of pedicel and fruits

A. divaricatus f. sutchuenensis



Fig. 1 *Acanthopanax divaricatus* Seem. var. *albofructus*
(the whole)

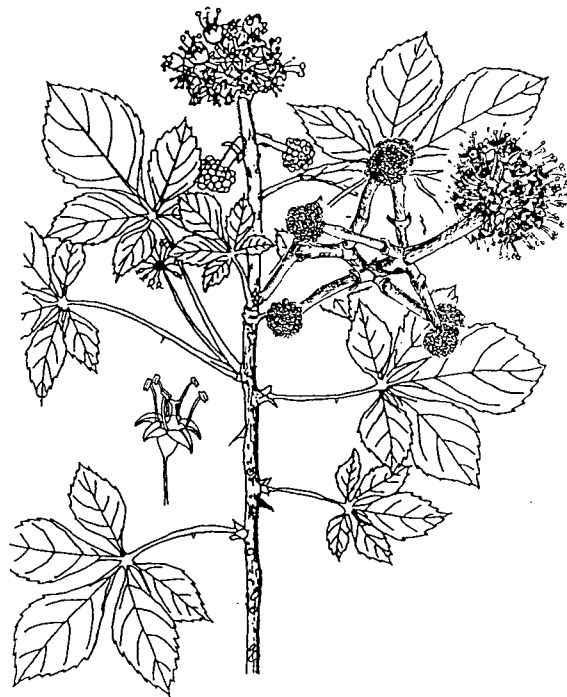


Fig. 1 *Acanthopanax divaricatus* Seem. var. *albofructus*
(the whole)

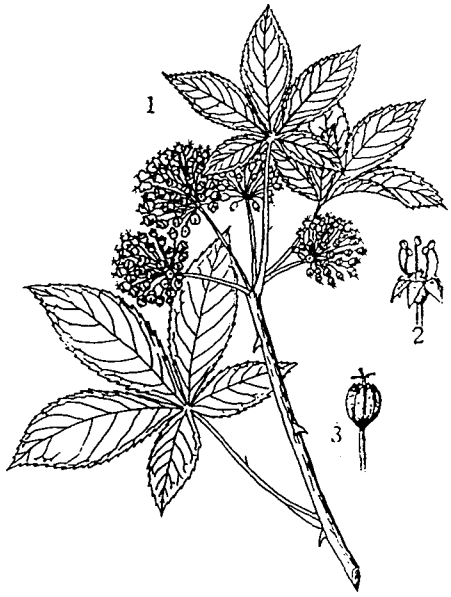


Fig. 2 *Acanthopanax divaricatus* Seemann.
var. *tristigmatis* 1. the whole 2. flower
3. fruit



Fig. 3 *Acanthopanax divaricatus* Seemann
f. *sutchuenensis* 1. flower 2. the whole
3. umbell



Fig. 4 *Acanthopanax pedunculus*(the whole)

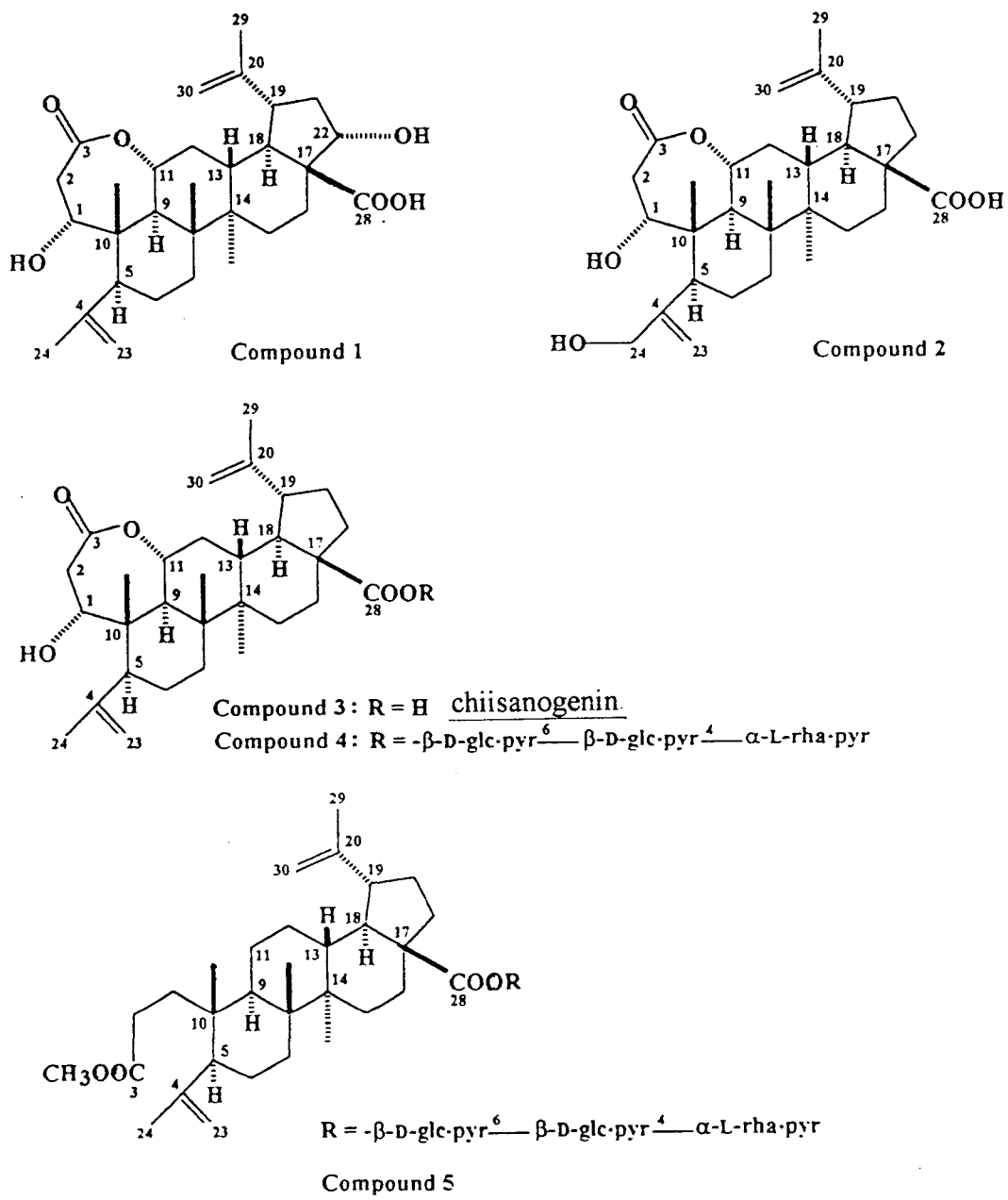


Fig. 5 Compounds 1-5 isolated from leaves of *A. divaricatus* var. *albofructus*



흰털오갈피 *Acanthopanax divaricatus* Seemann var. *albeofructus*





흰털오갈피 *Acanthopanax divaricatus* Seemann var. *albofructus* 花



花

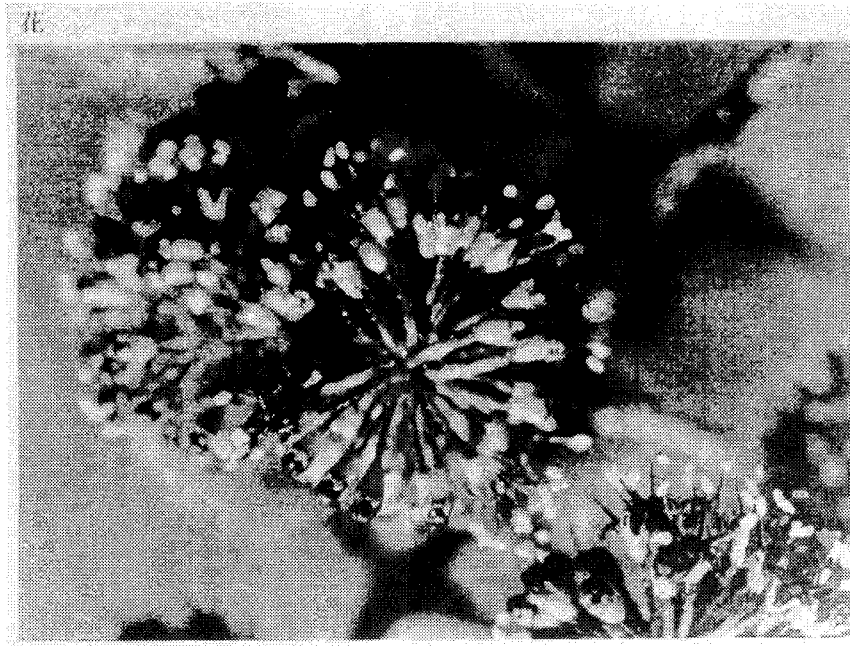
흰털오갈피 *Acanthopanax divaricatus* Seemann var. *albofructus*



줄기(莖)와 刺



삼주오갈피 *Eleutherococcus senticosus* Maxi. var. *tristigmatus*



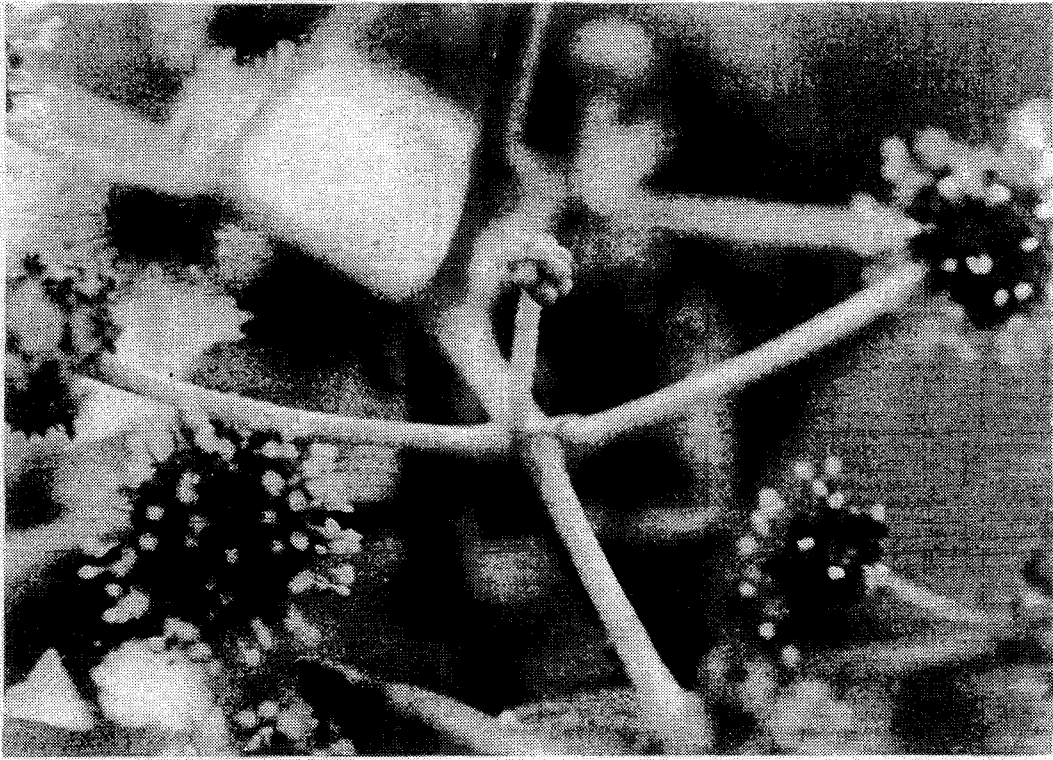
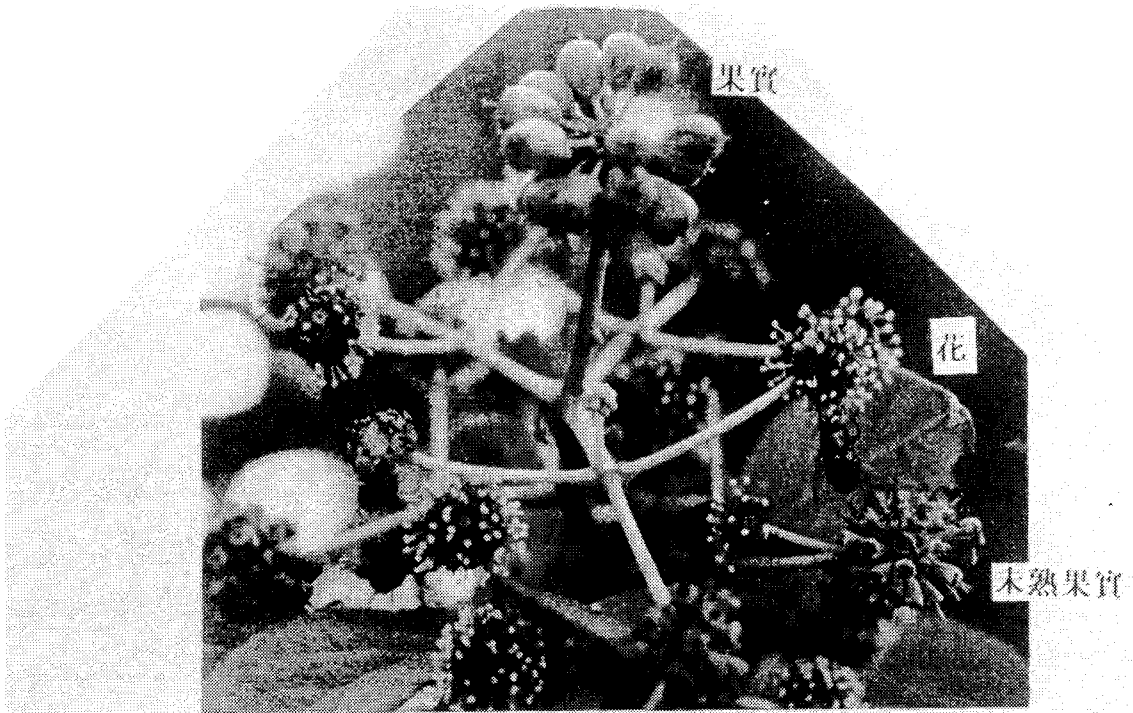
삼주오갈피 *Eleutherococcus senticosus* Maxi. var. *tristigmatus*



사천오갈피 *Acanthopanax asperatus* var. *albeofructus*



사천오갈피 *Eleutherococcus senticosus* forma. *sachunense* 1999. 8. 15



참오갈피 *Acanthopanax pedunculatus*

花

Reference

- 1) Yook C. S. et al: Studies on Morphological and chemotaxonomy and seco-triterpene glycoside components of Korean *Acanthopanax* Spp., Bull. D. S.pharm. sci., Inst. vol.11, 1-66(1994)
- 2) Yook C. S.: Coloured Medicinal Plants of Korea P.372(1997) Academy co. Seoul, Korea
- 3) J. Oh Jin, Chang S. Y., Yook C. S., Park S. Y., T. Nohara; Two 3, 4-seco-Triterpenes from Leaves of *Acanthopanax divaricatus* var. *albeofructus* Yook, Chem.pharm.bull. 48, 879-881(2000)
- 4) Oh O. J., Chang S. Y., Kim T. H., Yang K. S., Yook C. S., Park S. Y., Nohara T., Natural Medicines, 54, 29-32(2000)
- 5) Yook C. S., Leem J. Y., Hahn D. R., The abstract papers of The 4th International Symposium of Plant Biosystematics, Biological Approaches and Evolutionary Trends in Plants, Kyoto, Japan, 1993, pp.53-54.
- 6) Yook C. S., Kim I. H., Hahn D. R., Nohara T., Chang S. Y., Phytochemistry, 49, 839-843(1998)
- 7) Chang S. Y., Yook C. S., Nohara T., Phytochemistry., 50, 1369-1374 (1999)
- 8) Chang S. Y., Yook C. S., Nohara T., Chem. Pharm. Bull., 46, 163-165(1998)
- 9) Shirasuna K., Miyakoshi M., Mimoto S., Isoda S., Satoh Y., Hirai Y., Ida Y., Shoji J., Phytochemistry, 45, 579-584(1997)