

TERPENES FROM *ARALIA* SPECIES

K. YOSHIHARA and Y. HIROSE

Institute of Food Chemistry, 2-43 Dojimanaka, Kitaku, Osaka, Japan

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Key Word Index—*Acanthopanax sciaphylloides*; *Aralia cordata*; *Panax japonicum*; Araliaceae; monoterpenes; sesquiterpenes; germacrene-D.

Plant. *Aralia cordata* Thunb. (Japanese name, udo). *Source.* Mt. Shigi, Osaka. *Uses.* Vegetable. *Previous work.* None.

Aerial plant. The essential oil (16 g, 0.07% yield) was obtained from fresh root (24 kg) by extraction with Et₂O and distillation (100°C, 0.1 torr). The oil was subjected to fractional distillation, alumina column chromatography and preparative GLC (20 wt% of Carbowax 20M on Diasolid L, 150–200° of column temp.). Camphene (trace), α -pinene (3%), γ -terpinene (1%), sabinene (18%), myrcene (4%), limonene (30%), α -copaene (trace), humulene (1%), *trans*-sabinene hydrate (1%), *cis*-sabinene hydrate (trace) and terpinen-4-ol (trace) were isolated and identified by IR analysis.

Plant. *Acanthopanax sciaphylloides* Franch et Sav. (Japanese name, koshiabura). *Source.* Mt. Shigi, Osaka. *Previous work.* None.

Aerial plant. The volatile oil (1.2 g, 0.024% yield) was obtained from the fresh plant (5 g) by Et₂O extraction followed by this oil with aq. AgNO₃ and treatment of aq. layer with aq. NaCl gave pure germacrene-D (850 mg, 71% yield), which was identified in IR spectrum. The GLC (HB-2000 capillary column, FID, 150° of column temp.) showed no other sesquiterpene was contained in this oil. It is characteristic that germacrene-D, a key intermediate on sesquiterpene biogenesis, is contained alone.

Plant. *Panax japonicum* C. A. Meyer (Japanese name, tochiabaningin). *Source.* Mt. Kongo, Osaka. *Uses.* Folk medicine. *Previous work.* None.

Rhizome. The volatile oil (0.8 g, 0.016% yield) was obtained by extraction with Et₂O and distillation of the extract (80°, 0.1 torr) from fresh rhizome (5 kg). By extraction of the oil with aq. AgNO₃ and treatment of the aq. layer with aq. NaCl, germacrene-D was isolated and identified by IR analysis. It was shown by analytical GLC (HB-2000 capillary column, FID, 150° of column temp.) that germacrene-D was in exclusive ratio. β -Santalene and β -farnesene were found by GC-MS analysis in trace amount in this oil.

Voucher specimens Nos. 12778, 12779 and 12782 of all three plants are deposited in Herbarium of Osaka Museum of Natural History.