

**NOTE****Comparative Study of the Essential Oils from  
*Hemidesmus indicus* and *Decalepis hamiltonii***

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The essential oils from the dry roots of *Decalepis hamiltonii* and *Hemidesmus indicus* were analyzed by GC and GC-MS. Five and seven compounds respectively were identified. 2-Hydroxy-4-methoxybenzaldehyde was found to be the major component in *D. hamiltonii* (96.29 %) as well as *H. indicus* (97.89 %). In addition, a comparison of the essential oils from previously investigated fresh and these dry roots of *H. indicus* was done which showed that 2-hydroxy-4-methoxybenzaldehyde was not lost during drying.

**Key Words:** *Decalepis hamiltonii*, *Hemidesmus indicus*,  
Essential oil.

*D. hamiltonii* is a climbing shrub with jointed branches and cylindrical, fleshy, aromatic roots. The dry roots are generally called Bombay nannari in the markets of Kerala. These plants are found in peninsular India up to an elevation of 1400 m; common in the forests of Western Ghats<sup>1</sup>. The roots are considered an appetizer and blood purifier. In ayurvedic practice, it is used as a substitute for the plant drug, Sariva (comprised of the roots of *H. indicus*). The essential oil of *D. hamiltonii* has been investigated for its activity against various food borne pathogens<sup>2,3</sup>.

*H. indicus* is a slender, twining or prostrate perennial shrub with cylindrical stems and aromatic roots<sup>4</sup>. They are commonly called the Indian Sarasaparila in English and Nannari or Naruninti in Malayalam. They are common in the open deciduous and scrub forest hedges and on degraded sites all over India and Srilanka<sup>5</sup>. The dry roots are official in the Indian Pharmacopoeia<sup>6</sup>. The root and root bark are considered as an alterative, tonic, demulcent, diaphoretic, diuretic and blood purifying and are used in several well known ayurvedic preparations.

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The roots of *D. hamiltonii* and *H. indicus* were purchased from drug merchants and identified by Dr. A.K. Pradeep, Department of Botany, Calicut University, Calicut, India.

The dry roots of *D. hamiltonii* (1.5 kg) and *H. indicus* (1.0 kg) were both ground using an electric mixer grinder and subjected to steam distillation for 3 h. The distillates were extracted with ether (3 × 100 mL) and dried using anhydrous sodium sulphate. The dry ether extract on evaporation were found to have yields of 0.37 and 0.31 g, respectively.

The GC-MS analyses were carried out by using a Shimadzu GC-17A with QP5050 and the data system Compaq-ProLinea (Class5k-software), Hewlett-Packard GC-HP 5890 with HP-5970MSD and PC-Pentium (Böhm Co; Chemstation-Software) and Finnigan MAT GCQ with data system Gateway-200-PS75 (Siemens Co; GCQ-software). An apolar 30 m OV-1-type column (0.32 mm i.d. and 0.25 µm film thickness) and helium as carrier-gas was used. Injector temperature: 250°C; interface heating: 300°C; ion source heating: 200°C, EI-mode; scan range: 41-450 amu. For compound identifications Wiley-, NBS- and NIST-library spectra (on line) as well as reference MS-spectral data were used<sup>7,8</sup>.

GC-FID analyses were carried out using a Shimadzu GC-14A with FID and the integrator C-R6A-Chromatopac and a Varian GC- 3700 with FID and the integrator C-RIB-Chromatopac (Shimadzu Co.). For the column see GC-MS. Carrier gas: hydrogen; injector-temperature was at 250°C and detector temperature at 320°C; temperature-program: 40°C/5 min to 280°C/5 min with a heating rate of 6°C/min. Quantifications were made by relative % peak-area calculations.

The major compound of the five and seven components identified and characterized (Table-1) from the essential oils of *D. hamiltonii* and *H. indicus*, respectively, was found to be 2-hydroxy-4-methoxybenzaldehyde (96 and 98 %, respectively). This findings justifies the old ayurvedic practice of using *D. hamiltonii* and *H. indicus* interchangeably.

TABLE-1

Identified components	<i>D. hamiltonii</i> (%)	<i>H. indicus</i> (%)
Anisaldehyde	–	0.11
Octanoic acid	–	0.38
2-Hydroxy-4-methoxybenzaldehyde	96.29	97.89
Thymol	0.74	0.11
Decanoic acid	0.10	0.53
Isobutyl anilide	–	0.23
Palmitic acid	1.12	0.74
<i>m</i> -Guaiacol	0.92	–

The analysis of the dry roots of *H. indicus* showed that the percentage of 2-hydroxy-4-methoxybenzaldehyde is comparable to its percentage in fresh roots, analyzed in a previous work and published elsewhere<sup>9</sup>. This result shows that the medicinal quality of this plant will not be reduced on drying, though ayurveda recommends the use of fresh plants.

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