Journal of Chromatography, 333 (1985) 288–289
Elsevier Science Publishers B.V., Amsterdam — Printed in The Netherlands

CHROM. 17 943

Note

Paper chromatography of the essential oils occurring in the genus Stachys

ERNEST MALÝ
Institute of Gerontology, P.O. Box 25, 901 01 Malacky (Czechoslovakia)
(Received May 2nd, 1985)

Some time ago I obtained good separations of mixtures of polycyclic hydrocarbons using a very simple chromatographic system, namely Whatman No. 4 paper impregnated with paraffin oil (10% in petroleum ether) with ascending development using methanol as the mobile phase[1].

I have also obtained good separations in the analysis of the essential oils of the genus Stachys. These oils have two main constituents which were previously separated by column chromatography[2] and which fluoresce under UV light. They are: 1, a sesquiterpenic enol, stachynone or sesquinol, 1-isopropyl-4,7-dimethylbi-

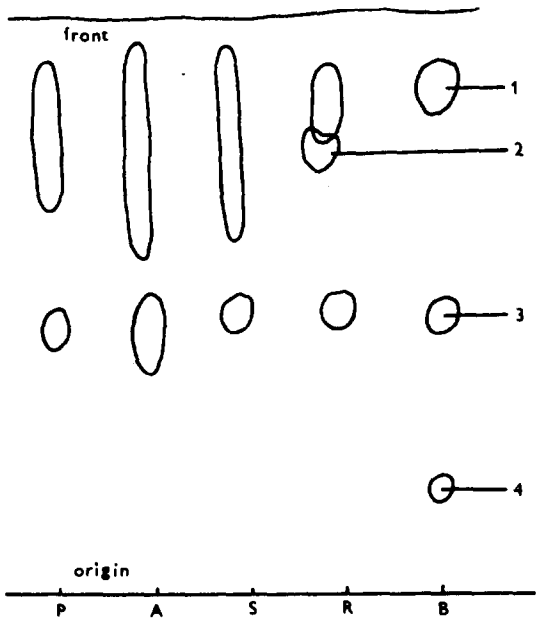

Fig. 1. The paper chromatographic patterns of the essential oils from *Stachys palustris* (P), *S. annua* (A), *S. silvatica* (S), *S. recta* (R), and *S. betonica* (B). Spots; 1 = stachynone, faint blue fluorescence with touch of yellow; 2 = quenched spot of an unidentified compound; 3 = stachynene, blue fluorescence; 4 = unidentified compound, greenish fluorescence.

0021-9673/85/$03.30

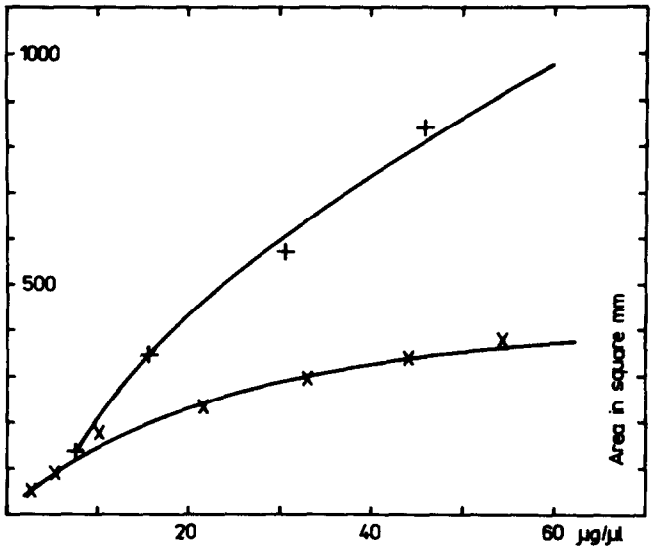

Fig. 2. The planimetric curves of stachynone (upper) and of stachynene (lower).

cyclo [4.4.0]10-decaene-6-one, m.p. 54–55°C, $[\alpha]_D^{22} = -2.45$ in tetrachloro methane, $\lambda_{max.} = 210$ and 264 nm, $\lambda_{exc.} = 360$ nm, $\lambda_{em.} = 395$ and 460 nm (the major peak), relative intensity 4.0, $\lambda_{exc.} = 520$ nm, $\lambda_{em.} = 545$ nm, relative intensity 2.2, R_F 0.93 (an oblong spot); 2, its parent bicyclic sesquiterpene of the cadalene type, 1-isopropyl-4,7-dimethylbicyclo[4.4.0]6,10-decadiene, d_4^{21} 0.8762, n_D^{21} 1.4794, $\lambda_{max.} = 227$, 245, 277, 284 and 330 nm, $\lambda_{exc.} = 360$ nm, $\lambda_{em.} = 450$ nm, relative intensity 39.8, R_F 0.40.

During the column chromatography a waxy material was also isolated from the oil of *Stachys annua* which had R_F values of 0.60 and 0.36 (m.p. 34 and 127°C) and which may give rise to a grey fluorescent background on the chromatograms.

After development on the paper (Whatman No. 3 or 17) stachynone can be isolated from the paraffin used as stationary phase by elution with diethyl ether on a silica column and stachynene with pentane on a Florisil column. The chromatograms were usually run in glass cylinders (diameter 15 cm, height 30 cm) with a ground-glass lid. Typical chromatograms are shown in Fig. 1. A semi-quantitative evaluation by spot area measurement is possible. The relationship for a typical chromatogram is shown in Fig. 2.

REFERENCES

1 E. Malý, *J. Chromatogr.*, 40 (1969) 190–191.
2 E. Malý, *Miltitzer Ber.*, (1982) 27–29.