Journal of Chromatography, 264 (1983) 485–486
Elsevier Science Publishers B.V., Amsterdam — Printed in The Netherlands

CHROM. 15,879

Letter to the Editor

Correlation between the retention of cardiac glycosides in reversed-phase high-performance liquid chromatography with a diphenylsilyl stationary phase, their structure and biological activity

Sir,

The recent investigation by Davydov *et al.*[1] on the correlation between the retention of cardiac glycosides in reversed-phase high-performance liquid chromatography (RP-HPLC), their structure and biological activity is indeed an important one in pharmaceutical chemistry.

However, some questions can be raised as to the presentation of the data. The authors represented the biological activity of the cardiac glycosides, LD, in units of mg/kg, although LD is usually evaluated in the units of moles/kg and/or any other units including numbers of molecules, especially as the molecular weight of the compounds ranges widely in this instance. In addition, the relationship between LD and the retention volume, V_m, on the hydrophobic silica gel surface containing diphenylsilyl groups is represented in Fig. 12 of the paper as LD *versus* V_m. But such relationships are generally expressed as plots of log LD *versus* log V_m.

In Fig. 1 I have replotted the authors' data, using the units of moles/kg instead of mg/kg for LD. A good linear relationship is observed between log LD and log V_m of cardiac glycosides except G-strophanthin. It seems that the most important contribution to this relationship is the hydrophobic properties of glycosides, as was stated[1].

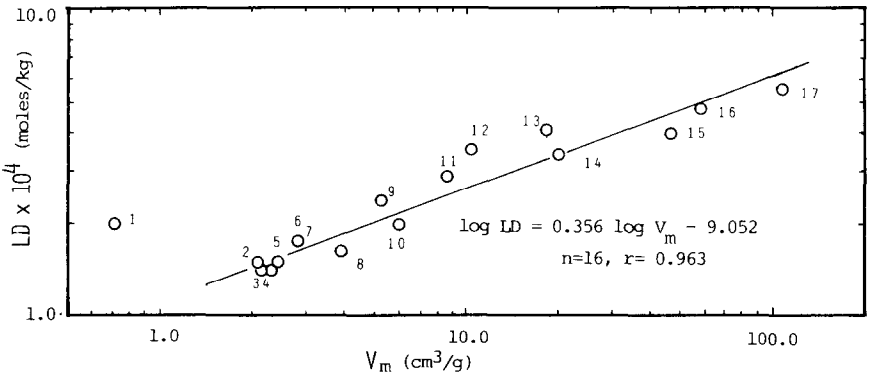

Fig. 1. Correlation between the biological activity, LD, of cardiac glycosides and their retention volumes, V_m, on the hydrophobic silica gel surface with water–ethanol as eluent. Glycosides: 1 = G-strophantin; 2 = corelborin-π; 3 = K-strophanthoside; 4 = convallatoxin; 5 = olitoriside; 6 = K-strophantin-β; 7 = desglucocheirotoxin; 8 = erysimin; 9 = desacetyl-lanatoside C; 10 = cymarin; 11 = lanatoside C; 12 = digoxin; 13 = lanatoside B; 14 = oleandrin; 15 = lanatoside A; 16 = digitoxin; 17 = acetyldigitoxin.

0021-9673/83/$03.00

In conclusion, by use of the alternative method of presentation described here, the data of Davydov *et al.*[1] clearly indicate that chromatographic retention in RP-HPLC can be employed as a descriptor of the biological activity of cardiac glycosides.

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1 V. Ya. Davydov, M. Elizalde Gonzalez and A. V. Kiselev, *J. Chromatogr.*, 248 (1982) 49.

(Received March 22nd, 1983)