

论文

非挥发性毒物的纸层析

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摘要:

关键词:

PAPER CHROMATOGRAPHY OF NON-VOLATILE POISONS

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Abstract:

The usual non-volatile poisons are divided into 3 groups and treated respectively by ascending chromatographic method for the acidic organic poisons, by descending chromatographic method for the basic organic poisons, and Giri's method for metallic poisons, all using Whatman No. 1 filter paper. For the acidic poisons, we have separated phenacetin, salicylic acid, barbital and phenobarbital on paper treated with 3.5% KCl, using n-octanol: ammonium hydroxide (sp. gr. 0.88) : water=100: 7.5:100, n-octanol: cyclohexanol: ammonium hydroxide: water = 50: 50: 7.5: 100 and n-octanol: cyclohexanol: ammonium hydroxide: water=25: 75: 7.5: 100, as the developing solvents, with the best results ever obtained. The  $R_f$  values and visualizing reagents are listed in Tab. 1. The relations between  $R_f$  values and the proportions of n-octanol to isoamyl alcohol and of n-octanol to cyclohexanol are shown in Fig. 1, 2. For the basic organic poisons, by 7 methods prominently selected, we have got favorable results (Fig 4) using filter paper treated by acidic salts, with n-butanol and isoamyl alcohol as the solvents. The  $R_f$  values obtained by the above methods are shown in Tab. 2. Of all the 7 methods, the one using filter paper, treated by sodium dihydrogen citrate, with n-butanol: isoamyl alcohol: hydrochloric acid: water=10: 10: 2: 40 as the solvent, is considered to be the best in respect of separating 8 compounds from one another in this group. The relation between  $R_f$  values and proportions of n-butanol to isoamyl alcohol are manifested in Fig. 3. The temperature affects the  $R_f$  values and with the increase of the temperature, the  $R_f$  values of 5 out of 8 compounds increase while those of the rest, on the contrary, decrease, as shown in Fig. 6. The basic dissociation constant is one of the factors to affect  $R_f$  values in this group. For the metallic poisons, the mixture of HCl of different concentrations with absolute alcohol as developing solvents are used and the relation of HCl of various concentrations with  $R_f$  ( $R_{fc}$ ) is shown in Fig.5. A good result from 3 N HCl: absolute alcohol =1:9 and the best result ever produced from 5 N HCl instead are shown by their  $R_f$  values in Tab. 3. In addition, we have tested phenacetin, barbital, phenobarbital, chromium and arsenic on filter paper by new or modified methods, with satisfaction.

Keywords:

收稿日期 1956-11-19 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者:

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