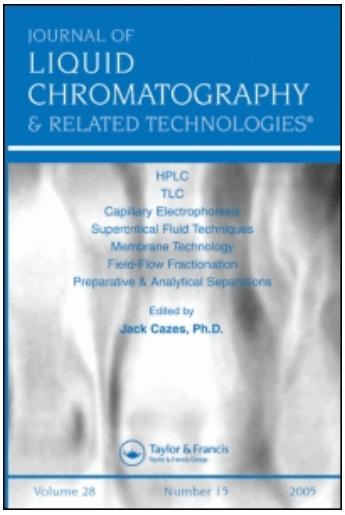

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Identification of Some Closely Related Potential Antidiabetic 4-Arylhydrazono-1-Guanylnitrate-3-Methyl-2-Pyrazolin-5-Ones

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IDENTIFICATION OF SOME CLOSELY RELATED POTENTIAL ANTIDIABETIC 4-ARYLHYDRAZONO-1-GUANYLNITRATE-3-METHYL-2-PYRAZOLIN-5-ONES

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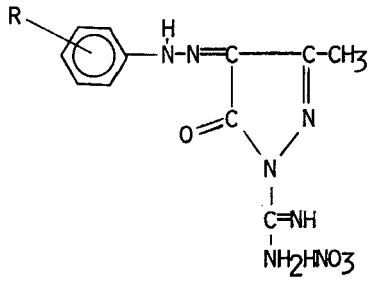
As an extension of our studies on thin-layer chromatographic (TLC) analysis of antineoplastics[1] and antidiabetics[2], we investigated the TLC separation of some closely related potential antidiabetic 4-arylhydrazono-1-guanylnitrates-3-methyl-2-pyrazolin-5-ones(A).



STRUCTURE (A)

where, R represents different substituents.

A literature survey suggested that the TLC analysis of guanylpyrazoline nitrates has not been reported earlier. The present paper describes a simple and rapid TLC procedure that utilizes neutral solvent systems for the separation of compounds I-IX on silica gel adsorbent.

TABLE 1-SOLVENT COMPOSITION:

(A) Chloroform:cyclohexane: methanol (60% : 20% : 20%)

(B) Chloroform:cyclohexane: ethylmethyl ketone (55% : 25% : 20%)

No.	R	R_f x 100		Detection limit (μg)
		A	B	
I	H	59	40	2.5
II	2-CH_3	51	49	2.5
III	3-CH_3	58	37	3.0
IV	4-CH_3	63	55	3.5
V	2-Cl	40	25	3.0
VI	3-Cl	34	31	3.5
VII	4-Cl	43	36	2.5
VIII	2-OCH_3	30	21	2.5
IX	3-OCH_3	26	24	3.0
X	4-OCH_3	37	28	2.5
XI	2-OC_2H_5	27	20	2.5
XII	3-OC_2H_5	32	17	2.5
XIII	4-OC_2H_5	35	26	3.5
XIV	2-NO_2	64	69	3.5
XV	4-NO_2	68	74	3.0
XVI	2-Br	20	18	2.5
XVII	2,3-$(CH_3)_2$	12	10	3.5
XVIII	3,5-$(CH_3)_2$	24	15	3.5
XIX	2,6-$(CH_3)_2$	19	11	3.5

EXPERIMENTAL

The glass plates of the size 21.5 x 21.5 cm were coated with silica gel G (thickness 0.5 mm) with the help of stahl type applicator and were developed in glass troughs. All the guanylnitrate pyrazolines were synthesized in the laboratory[3] and repeatedly recrystallized with ethanol before subjecting them to chromatographic separations. A 0.2% solution of the compound in acetone was applied to the plates with the help of a fine glass capillary. The composition of the developer used for compounds I-XX was (A) chloroform: cyclohexane:Methanol: (60% : 20% : 20%). (B) Chloroform: cyclohexane:Ethylmethyl ketone: (55% : 25% : 20%). After development the colour of the spots was light yellow which was being darkened by exposure to iodine vapours for about 1 minute. Except 4-Cl and 3-CH_3, no tailing was observed in any case. The R_f values obtained were found reproducible in the different identical runs and are compiled in Table 1.

RESULTS AND DISCUSSION

The TLC data on the separation of guanylnitrate pyrazolines are given in Table 1. The chromatographic development time of solvent systems (A-B) employed was about 40 minutes. Both the solvent systems used gave satisfactory separation of most of the compounds. The results show an interesting trend in the R_f values. It is observed that in the case of ortho substituted derivatives the rate of flow (R_f) of the spots is low whereas meta and para substituents increase the value of R_f in comparison with that of the parent unsubstituted compound.

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