

Table II—Mass Spectral Data

Trimethylsilyl Derivatives of Cannabinoids	<i>m/e</i>
(-)- Δ^9 - <i>trans</i> -Tetrahydrocannabinolic acid	502
(-)- Δ^9 - <i>trans</i> -Tetrahydrocannabivarinic acid	474
Cannabidiolic acid	574
Cannabidivarinic acid	546

acid derivatives in fresh *C. sativa* L. (8), so do the C₃H₇ (divarinyl group) side chains. GLC—mass spectrometry analysis of an Indian (IN-B) variant, silylated according to a reported procedure (9), contained a significant *m/e* at 546, corresponding to the trisilylated (trimethylsilyl ester bisether) derivative of I. Additionally, a significant *m/e* at 474 is indicative of disilylated (trimethylsilyl ester-ether) II. These data agree with the mass spectral data obtained for silylated acid derivatives of VIII and V, having *m/e*'s of 574 and 502, respectively (Table II). TLC was employed for identification of III, which has a relative retention time corresponding to IV and VIII. Compound III was not clearly observed in fresh samples of cannabis but was observed when samples containing II were heated. Thus, no data are presently available on the acid derivative of III.

Propyl homologs are, indeed, found in aerial parts of *C. sativa* L. plant material from many geographical locations. The abundances of propyl homologs vary, as do the pentyl homologs, in regard to geographical origin. However, we do not believe it feasible to determine exact geographic origin using the propyl homologs as "locators." Moreover, the propyl homologs exist predominantly as their carboxylic acid derivatives as do the pentyl homologs.

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Coacervate Formation by Inorganic Salts with Benzalkonium Chloride

Keyphrases Coacervate formation—sodium chloride and sodium carbonate with benzalkonium chloride Sodium chloride—coacervate formation with benzalkonium chloride Sodium carbonate—coacervate formation with benzalkonium chloride, effect of concentration on coacervate volume and refractive index Inorganic salts, sodium chloride and sodium carbonate—coacervate formation with benzalkonium chloride Benzalkonium chloride—coacervate formation with sodium chloride and sodium carbonate

Sir:

A number of dilute aqueous solutions of proteins (1), polyelectrolytes (2), association colloids (3-5), carbonates (6), and lipids (6) have been investigated and found capable of forming coacervates under proper conditions. The essential feature of the coacervation phenomenon is the spontaneous separation of a homogeneous macromolecular or microionic aqueous solution into two immiscible aqueous solution phases. One aqueous layer contains most of the colloid and is termed the coacervate, while the second aqueous layer is colloid poor and is termed the equilibrium liquid. These coacervate systems are of growing general scientific (7, 8) and biological (9) interest.

The term biphasic coacervate system refers to the coacervate phase in contact with its equilibrium liquid phase. The term monophasic solution refers to the one-phase micellar solution.

Coacervation has been observed in some dilute soap solutions, and it has been reported (5) that coacervation in cationic detergent systems shows pronounced specificity to the anion and lesser sensitivity to the cation of the added electrolyte. Shah *et al.* (3) reported coacervate formation between the cationic surfactant, benzalkonium chloride, and the organic aromatic compound, sodium salicylate.

This communication reports on coacervate formation by sodium salts of inorganic monovalent and

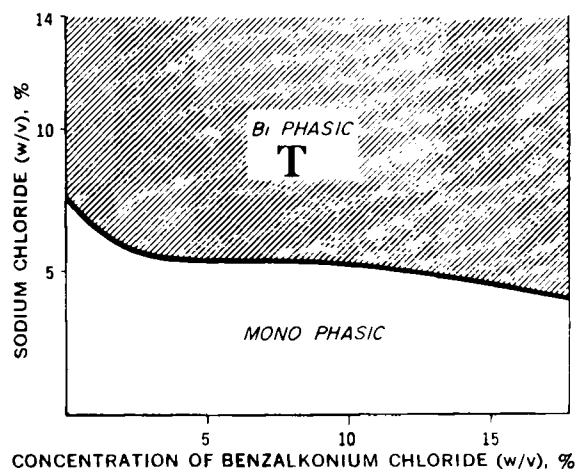


Figure 1—Phase transition diagram of sodium chloride-benzalkonium chloride coacervate system at 25°. Shaded area [T] represents the region in which biphasic coacervate system can be formed with lighter coacervate phase.

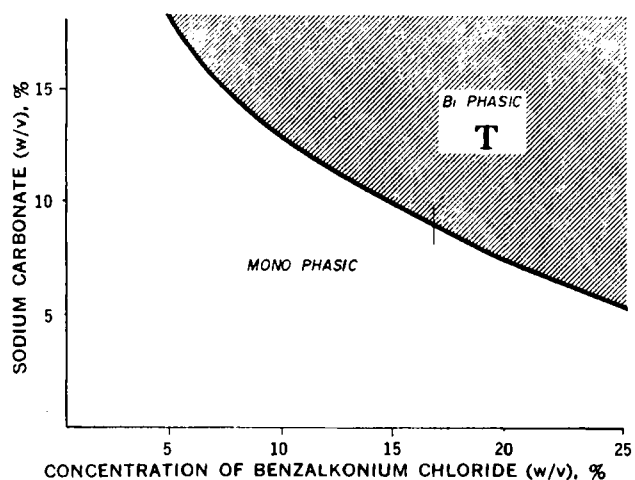


Figure 2—Phase transition diagram of sodium carbonate-benzalkonium chloride coacervate system at 25°. Shaded area [T] represents the region in which biphasic coacervate system can be formed with lighter coacervate phase.

bivalent anions, *i.e.*, sodium chloride and sodium carbonate, with benzalkonium chloride. Also reported is the effect of sodium carbonate concentration on the coacervate volume and refractive index of the coacervate phase.

The coacervate systems were obtained by mixing the indicated concentrations (Fig. 1) of salt and benzalkonium chloride in water. Figure 1 shows the phase transition diagram of the sodium chloride and benzalkonium chloride coacervate system at the points of coacervate formation. Figure 2 shows the phase transition diagram of the sodium carbonate and benzalkonium chloride coacervate system. These diagrams illustrate two main regions: (a) biphasic coacervate system, represented by the shaded area; and (b) monophasic solution, represented by nonshaded area. In both coacervate systems, the formed coacervate phase was lighter than the equilibrium liquid phase.

Figure 3 represents the effect of the sodium carbonate concentration on the refractive index and coacervate volume. For this study, 100 ml. of coacervate systems, containing 25% (w/v) benzalkonium chloride with 5.6,

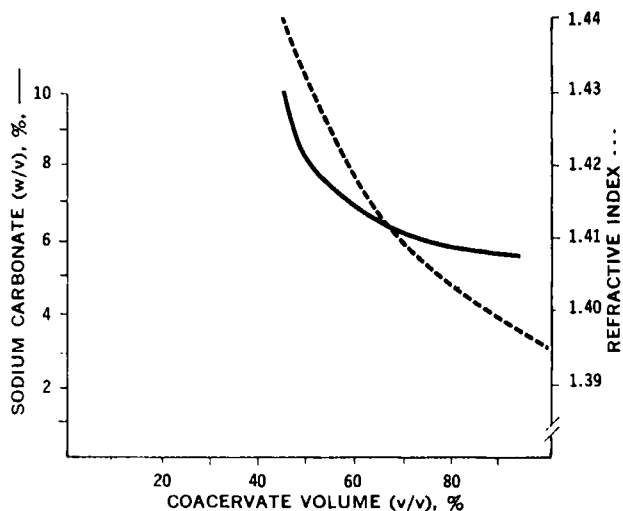


Figure 3—Volume and refractive index of coacervate phase of sodium carbonate-25% benzalkonium chloride coacervate system at 25°.

6.0, 7.0, 8.0, and 10.0% sodium carbonate, was prepared. The systems were allowed to equilibrate for 24 hr. at room temperature (25°). The volume of coacervate was noted as the percent of the whole system. The refractive index of the coacervate phase was measured at 25° using a refractometer¹.

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Possible Errors and Role of Mercuric Chloride in Using Trinder's Reagent for Assay of Salicylates in Urine Specimens

Keyphrases □ Salicylates in urine—analysis, Trinder's reagent with and without mercuric chloride □ Mercuric chloride in Trinder's reagent—effect on salicylate analysis in urine □ Trinder's reagent, with and without mercuric chloride—effect on salicylate analysis in urine □ Colorimetry—analysis, salicylates in urine, Trinder's reagent with and without mercuric chloride

Sir:

Trinder's reagent has been used in many colleges of pharmacy as a colorimetric agent to assay urinary salicylate and thereby to estimate the bioavailability of compounds such as aspirin, sodium salicylate, and *p*-aminosalicylic acid (1-4). The assay procedure is simple. One milliliter of the urine sample is usually diluted with 5 ml. of the reagent, and the absorbance of the resultant solution at 540 nm. is measured using the properly diluted (with water or urine blank) reagent as a reference solution. The absorbances of the urine samples