

Figure 2. Effect of penicillic acid on liposomes.

penicillic acid, forming S-alkylated derivatives. Rapidly metabolising embryonic and developing systems are found to react with these adducts. In our experiment liposome carrying a net negative charge may act as a nucleophile; hence the affinity of penicillic acid will be greater towards the liposome carrying a net negative charge, resulting in the higher leakage of entrapped ^{14}C -glucose.

In other words membranes carrying a net negative charge may be more vulnerable to the action of penicillic acid.

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A CONVENIENT LABORATORY SYNTHESIS OF METHYL ISOCYANATE

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METHYL isocyanate (MIC) is an important synthetic intermediate particularly in pesticide synthesis¹. Amongst the several procedures² reported for the synthesis of aliphatic isocyanates, the Curtius rearrangement of acylazides³ remains the method of choice due to the ready availability of acylazides. Acylazides are commonly prepared by reacting acylchloride with sodium azide. However, the insolubility of sodium azide in common organic solvents results in heterogeneous reaction conditions, leading to irreproducible results. The use of water-containing solvent mixture e.g. with aromatic acid chlorides is precluded due to the high sensitivity to hydrolysis of MIC. Several soluble azide equivalents for the preparation of aliphatic isocyanates have been described including tetramethylguanidinium azide⁴, trimethylsilyl azide⁵, tributylstannyl azide⁶ and tetrabutylammonium azide⁷. Although these reagents are soluble in organic solvents, they have to be prepared separately prior to their reaction with acyl chlorides. A laboratory procedure is reported here for the preparation of MIC.

The reaction of acetyl chloride and sodium azide in refluxing toluene in the presence of tetrabutylammonium bromide (TBAB) gave MIC in 70% yield. Comparable yield (73%) was obtained when reaction was conducted with 18-Crown-6 (18-C-6) in place of TBAB, while in their absence MIC resulted in only 20% yield, demonstrating definite advantage of phase transfer reagents in Curtius reaction. The

reaction appears to occur with exchange of TBAB with sodium azide yielding tetrabutylammonium azide *in situ*, which reacts with acetylchloride to form acetyl azide. As most aliphatic acylazides decompose to isocyanates⁸ at 25–45°C, MIC results directly under the experimental conditions i.e. refluxing toluene. A similar phase-transfer mechanism may also operate in case of 18-C-6.

The method described here is a simple and convenient procedure for synthesis of monomeric MIC and the yields obtained are higher than the reported procedures⁷. It may also be mentioned that although comparable yields of MIC are obtained using either TBAB or 18-C-6, the former has an advantage of low cost and is now being routinely used in our laboratory for synthesis of MIC. Furthermore, the method has also been adopted to prepare (1-¹⁴C) methyl isocyanate using (1-¹⁴C) acetyl chloride using microdistillation assembly for our studies on distribution and metabolism of MIC.

A 500 ml two-necked flask equipped with Leibig condenser, guard tube and dropping funnel was mounted on a magnetic stirrer. Freshly activated sodium azide³ (13 g, 0.2 M) and tetrabutylammonium bromide (1.6 g, 5×10^{-3} M; or 18-C-6, 180 mg, 7×10^{-4} M) and dry toluene (100 ml) were charged into the flask. Acetyl chloride (7.8 g, 0.1 M) was added dropwise to the stirred mixture. After the addition was completed the mixture was refluxed for one hr after which the product was distilled through an efficient 25 cm spiral condenser. Yield 3.9 g (70%), b. p. 38°C (Lit⁷ 38°C). The product was homogeneous on GLC (OV-17 column at 50°C, FID detector at 80°C), IR (neat) 2240, 2270 cm^{-1} (ν NCO) ¹H NMR (CDCl_3) δ 3.03 ($\text{CH}_3\text{-NCO}$), mass (E. I.) m/e 57 (M^+).

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SYMPLECTITIC INTERGROWTHS OF SAPPHIRINE IN CORDIERITE FROM BIOTITE-HYPERSTHENE-SILLIMANITE GNEISSES OF KASIPATNAM, VISAKHAPATNAM DISTRICT, ANDHRA PRADESH

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MIDDLEMISS¹, Walker and Collins² have reported the sapphirine-bearing rocks from the Eastern Ghats of India. Since then, many investigators have found and described sapphirine-bearing rocks from the high grade granulite belt. Grew³ reviewed the earlier works on sapphirine-bearing rocks of meta-sedimentary origin in the Eastern Ghats of India, and described the textures of some of these samples collected by him in the field, or received from others or from the Royal Ontario Museum, Canada. Geological work in Kasipatnam area in Visakhapatnam District (figure 1) revealed an occurrence of

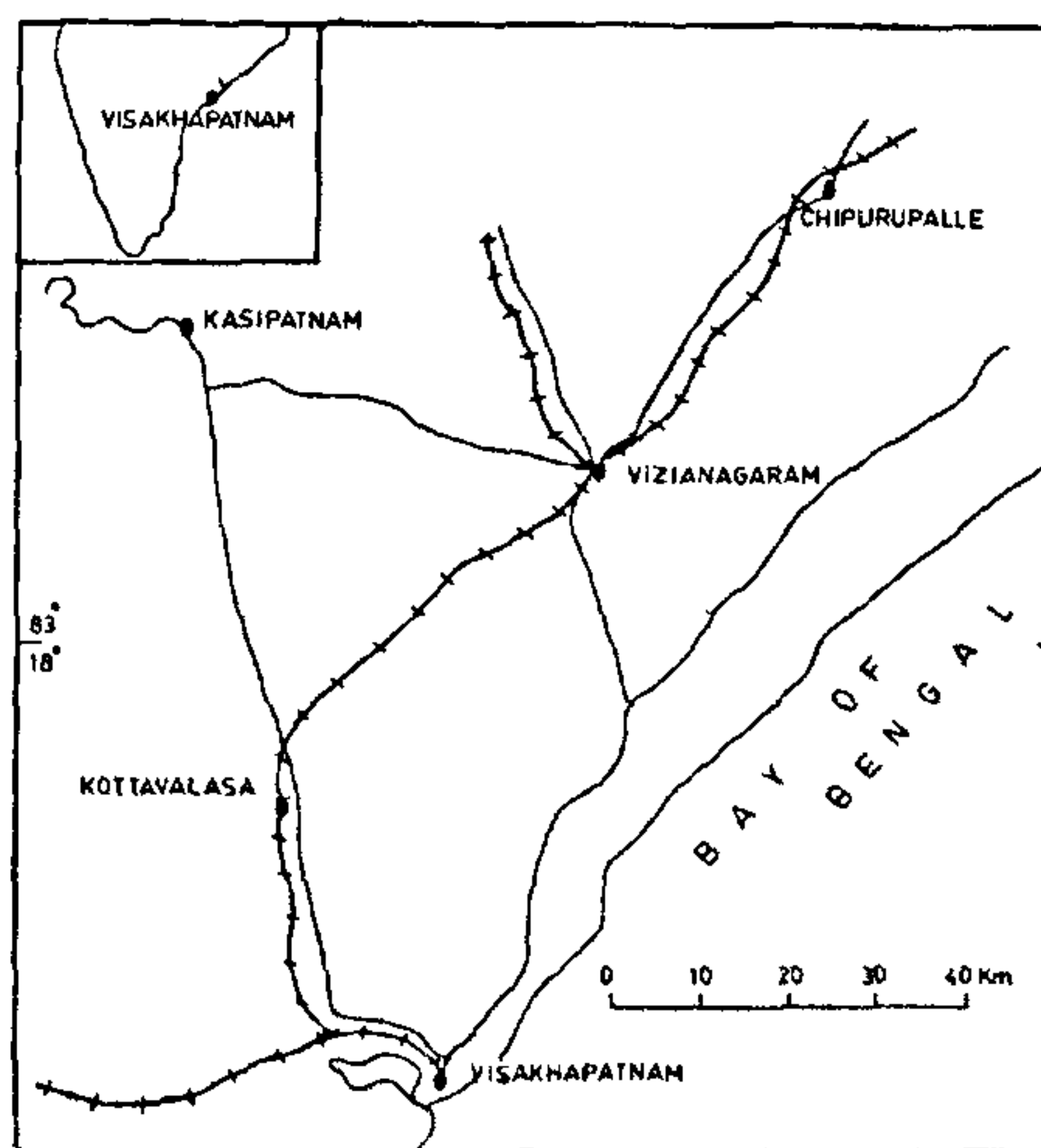


Figure 1. Location map of Kasipatnam area in Visakhapatnam District, Andhra Pradesh.