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Research Article

ANTIMICROBIAL INVESTIGATIONS OF SOME PHOSPHAZIDES ADDUCTS

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Abstract

Phosphazide adducts synthesized by the refluxing $[\text{NP}(\text{OH})_2]_3$ with some organic acid in presence of conc. H_2SO_4 were screened against the *E. coli* ($\text{gm}^{-\text{ve}}$), *Proteus mirabilis* ($\text{gm}^{-\text{ve}}$) and *Candida albicans*, fungi. The adducts are found effective against these bacteria and fungi and may be used as medicine for the diseases caused by these bacteria and fungi.

Keywords: Synthesis, Medicine, Antibacterial.

Introduction

Bacillary dysentery and enteric fevers continue to be The adducts of $[\text{NP}(\text{OH})_2]_3$ with some organic acids¹⁻⁶ such as cinnamic acid, oleic acid, acrylic acid, hippuric acid, salicylic acid, nicotinic acid and tannic acid have been investigated and reported, but their antibacterial studies has not been done so for.

Materials and Methods

During the synthesis of the adduct of $[\text{NP}(\text{OH})_2]_3$ which was prepared⁷ by the reaction of NaOH on $[\text{NP}(\text{Cl})_2]_3$ in a non polar solvent double distilled Anal-R-grade chemicals were used. The each organic acid, salicylic, hippuric nicotinic, glutamic, adipic, tannic was mixed with $[\text{NP}(\text{OH})_2]_3$ in 1:1 ratio in presence of 1 ml. conc. H_2SO_4 and refluxed for 6 to 8 hrs. the products, formed, were, separated washed with alcohol and ether subsequently dried and stored. The adducts were tested against gram-ve bacteria *E. coli*, *Proteus mirabilis* (PM) and *Candida albicans* (CA) fungi using in vitro technique. The inhibited area photographed was measured in (mm) and enlisted in table 1.

Results and Discussion

The adducts of $[\text{NP}(\text{OH})_2]_3$ with salicylic acid, nicotinic acid, Glutamic acid, Adipic acid, Tannic acid and

Hippuric acid are subsequently termed as AG-1, AG-2, AG-3, AG-4, AG-5, AG-6, *E.coli* $\text{gm}^{-\text{ve}}$ bacteria which is found in unpasteurized milk of cow or buffalo, enters in to the human body causing skin diseases, swelling, Phemonia and destroy the cell membrane and tissues. *Proteus mirabilis* $\text{gm}^{-\text{ve}}$ bacteria causes blood storm infection, renal failure, wound infection and septicemia etc. while *Candida albicans* courses primary infections of the AIDS.

Therefore the bacteria were screened against the adducts of the phosphazene and result were found vary enthusiastic. The adducts of salicylic acid is more effective against both bacteria and fungi (table -1). The adduct AG-2 is effective 16 mm against *Proteus mirabilis*, 27 mm against *E. coli* and 13 mm against the *Candida albicans*, similarly except AG-6, AG-4 and AG-5 are found effective against both bacteria and fungi, to a greater extent.

From the results it is evident that all these adducts may be used as medicine against the diseases caused by the *E. coli*, *Proteus mirabilis* bacteria and *Candida albicans* fungii. This may be due to the hydrolysis of N_3P_3 ring into NH_4^+ and PO_4^{3-} ions, which prevent the hydrolysis of the urase and other enzymes, which is done by *Proteus mirabilis* ($\text{gm}^{-\text{ve}}$), *E. coli* ($\text{gm}^{-\text{ve}}$), bacteria and *Candida albicans* fungi in the body causing different diseases.

Table 1: Zone of inhibition of Bacteria and fungi with compound

S. No.	Compounds	gm –ve Bacteria (mm)		Fungi (mm)
		<i>E. coli</i>	<i>Proteus mirabilis (PM)</i>	<i>Candida albicans</i>
1.	AG – 1	+46	+39	+35
2	AG – 2	+27	+16	+13
3	AG – 3	+13	+19	+10
4	AG – 4	+11	+26	+14
5	AG – 5	+14	+18	+13.5
6	AG – 6	+12	+24	-



Plate 1
Proteus mirabilis (gm –ve)
bacteria, effect of
compounds AG-1 to AG-6



Plate 2
E. coli (gm –ve)
Bacteria, effect of
compounds AG-1 to AG-6

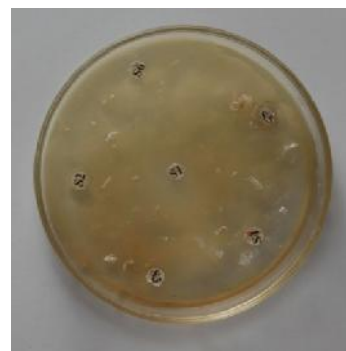


Plate 3
Candida albicans fungi,
effect of compounds
AG-1 to AG-6

Fig. 1: Zone inhibition of compounds against gm –ve bacteria, *E. coli*, *Proteus mirabilis* and Fungi, *Candida albicans*.

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