TABLE 1

Production of penicillin by different strains of P. notatum, as measured by the agar-tube method

CULTURE NO.	INCUBATION	DIAMETER OF CLEAR ZONE ON PLATE		
		Top of column	Middle of column	Bottom of column
	days	*mm.*	*mm.*	*mm.*
41	3	33.5	0	0
	7	36.3	30.0	0
	9	38.3	35.0	16.0
	14	41.5	36.5	34.0
40	3	42.0	13.0	
	6	40.0	32.0	
43	3	33.8	9.0	
	6	36.3	23.5	
45	3	30.3	0	
	6	30.8	12.5	
47	3	40.3	14.0	
	6	40.0	29.8	
161	3	22.8	0	
	6	25.5	11.5	

different strains, but also the rate of penicillin production and its diffusion through the agar; the method can also be utilized for comparing the effect of composition of medium upon penicillin production. It is of interest to note the apparent stability of the penicillin in the agar, as shown by its gradual accumulation and diffusion even after 14 days of incubation.

THE FORMATION OF TRIMETHYLAMINE FROM CHOLINE AS A CHARACTERISTIC OF SHIGELLA ALKALESCENS

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A primary division of the *Shigella* has been suggested, based on the formation of trimethylamine from its oxide by certain species of this genus (Wood, Baird and Keeping 1943). Further work has shown that *Shigella alkalescens* may be separated from the other species of *Shigella* by its ability to produce trimethylamine from choline.

The following medium was used to determine the action of the genus on choline:

Peptone (Difco)	0.5%
Choline hydrochloride	0.5
K_2HPO_4	0.1
$MgSO_4.7H_2O$	0.1
NaCl	0.5

pH adjusted to 7.2 before autoclaving.

The cultures listed below were inoculated in triplicate from nutrient agar slopes into this medium, and then incubated at 37°C. Qualitative trimethylamine tests were carried out using the procedure described by Wood and Baird (1943) at two, four and six days.

The results were as follows: 84 cultures of *Shigella alkalescens*, all positive; 12 cultures of *S. dysenteriae*, 87 of *S. paradysenteriae*, 2 of *S. paradysenteriae* (Boyd strains), 9 of *S. ambigua*, 1 of *S. schmitzii*, 5 of *S. sp* (Newcastle type), 1 of *S. equirulis*, 27 of *S. sonnei*, 21 of *S. madampensis* (dispar) and 2 of *S. ceylonensis*, all negative. There was complete agreement in all cases at all three periods of incubation. The negative *Shigella* species failed to produce trimethylamine from choline after 30 serial transfers in the choline medium. Likewise *S. dysenteriae* and *S. paradysenteriae* failed to produce trimethylamine from trimethylamine oxide even after 90 serial transfers in trimethylamine broth. *S. alkalescens* cultured in the absence of choline for eight months, did not lose its ability to produce trimethylamine in choline broth. It seems safe to conclude that trimethylamine formation or nonformation from choline and from trimethylamine oxide is a constant characteristic of a given species. From the data it is evident that *S. alkalescens* can be characterized by its ability to produce trimethylamine from choline. The choline test should be of value for the easy separation of *S. alkalescens* from *S. sonnei* and *S. madampensis*. In agreement with the trimethylamine test (Wood, *et al.* 1943) the choline reaction clearly divides *S. alkalescens* from *S. paradysenteriae*.

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