

Indian J Mar Sci

March 1990

CODEN : IJMNBF 19(1) 1-78 (1990)

ISSN : 0379-5136

Indian Journal of MARINE SCIENCES

Published by

PUBLICATIONS & INFORMATION DIRECTORATE, CSIR, NEW DELHI

in association with

THE INDIAN NATIONAL SCIENCE ACADEMY, NEW DELHI

Occurrence of 0/129 sensitive and polymyxin B resistant *Flavobacterium* and penicillin sensitive *Pseudomonas* in the coastal waters of Cochin

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Received 26 July 1989; revised 19 April 1990

About 145 bacterial isolates from the coastal waters of Cochin were tested for their sensitivity to penicillin, polymyxin B, and 0/129 (2-4 diamino 6-7 diisopropyl pteridine). Penicillin sensitive *Pseudomonas* (9.5%), penicillin resistant *Moraxella* (7.8%), polymyxin B resistant *Flavobacterium* (14.3%), and 0/129 sensitive *Flavobacterium* (57%) strains of bacteria were found. Occurrence of such bacterial isolates with variations in their reaction to antibiotics hinders their identification by the schemes proposed earlier.

Occurrence of antibiotic resistant bacteria has been often reported from various environments, including the coastal waters¹. This communication reports the occurrence of bacterial strains with variations in their antibiotic sensitivity pattern to penicillin, polymyxin B, and 0/129 (2-4 diamino 6-7 diisopropyl pteridine; a vibriostatic compound), and their implications in the identification of these bacteria.

During 1987-1988, 145 isolates of bacteria were obtained from the coastal waters of Cochin and identified². The isolates were subjected to antibiotic sensitivity test by disc diffusion technique to 0/129, polymyxin B, and penicillin. After preliminary screening of the bacteria (gram reaction, motility, O/F test, and pigment production), sensitivity test to the antibiotics was done to differentiate certain genera according to the identification schemes³⁻⁵. The genus *Vibrio* was differentiated from the other members of the family Pseudomonadaceae by its sensitivity⁶ to 0/129. The pigmented form *Flavobacterium* was differentiated from another pigmented *Cytophaga* from the latter's resistance to polymyxin B. *Pseudomonas* was differentiated from its related *Moraxella* by the former's resistance⁵ to penicillin.

The isolates of *Pseudomonas* and *Aeromonas* were all resistant to 0/129, whereas, 38.5% of *Moraxella* and 40% of *Acinetobacter* isolates, belonging to the family Neisseriaceae were sensitive to the vibriostatic compound (Table 1). A much higher percentage of pigmented bacteria, viz. *Flavobacterium* (57%) and *Flexibacter* (50%) were sensitive to 0/129. Shewan *et al.*³ in their scheme for differentiating gram negative,

oxidase positive asporogenous rods included the vibrios in a group with non-diffusible pigment, sensitive to 0/129. This may lead to incorrect identification of the isolates sensitive to 0/129, when a non-pigmented form of the genus *Flavobacterium* is encountered (*Flavobacterium* is included in the genera of uncertain affiliation of the family Vibrionaceae in the eighth edition of Bergey's manual²). About 9.5% of *Pseudomonas* isolates were sensitive to penicillin and 7.8% of the isolates of *Moraxella* were resistant to it. Although 100% of the isolates of *Cytophaga* were resistant to polymyxin B, the other pigmented genus *Flavobacterium* (14.3% of the isolates) also showed resistance to this antibiotic. Such bacterial isolates with variation in their reaction to antibiotics, viz. sensitivity of *Flavobacterium* to 0/129, and that of *Pseudomonas* to penicillin, and resistance of *Flavobacterium* to polymyxin B hinder the identification of the marine bacteria by the schemes³⁻⁵ proposed earlier. Although the number of bacterial isolates tested here is not large,

Table 1—Reaction of bacteria of coastal waters of Cochin to antibiotics

Genus (No. of isolates tested)	Percentage of bacteria			
	Sensitive to 0/129	Resistant to polymyxin B	Sensitive to penicillin	Resistant to penicillin
<i>Pseudomonas</i> (42)	None	14.3	9.5	90.5
<i>Aeromonas</i> (26)	None	30.8	30.8	69.2
<i>Moraxella</i> (26)	38.5	38.5	92.2	7.8
<i>Acinetobacter</i> (10)	49.0	60.0	60.0	40.0
<i>Flavobacterium</i> (14)	57.0	14.3	71.4	28.6
<i>Flexibacter</i> (16)	50.0	12.5	85.7	14.3
<i>Cytophaga</i> (11)	9.1	100	81.8	18.2

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the taxonomic significance of these results needs to be evaluated in order to formulate identification schemes for coastal and marine bacteria.

Author is thankful to Dr P S B R James, Director, Dr K Radhakrishna and Mr V K Pillai for encouragement.

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