

## THE ESTIMATION OF WATER CONTAMINATION BY NON-CHOLERIC VIBRIO SPECIES

Lauren iu M. Tudor, Elena I. Mitr nescu

Faculty of Veterinary Medicine, Food Hygiene and Public Health Department, Microbiology of Foods Laboratory, Bucharest, Romania

### Introduction

While on international plan have been developed numerous scientific knowledge as regards infection by *Vibrio* genus, in our country little data exist following the toxic infection's incidence produced by non-choleric vibrios (*Vibrio vulnificus*, *Vibrio fluvialis*, *Vibrio mimicus*, *Vibrio alginolyticus*, *Vibrio metschnikovii*, *Vibrio parahaemolyticus*, *Vibrio furnissii*, etc) and especially the studies concerning the presence of these bacteria into waters, on skin surface or in natural cavities of different aquatic organisms, as well as into different types of food.

### Material and Methods

For a correct evaluation of contamination grade from sweet and salt waters, the water samples has been harvested right from aquatic medium into sterile receipts. After harvesting, they has been introduced into bottles with different pre-enriching mediums (saline alkaline peptonated water and saline bullion with B polymyxine).

The study was effectuated during 7 years long (1997-2003); the geographic area has been represented by hydrographic network from south and south-east of Romania: Danube Delta Biosphere Reservation, Razelm-Sinoe Complex, the seaside of Black Sea, St. Gheorghe, Sulina, downstream of Danube, different waters from south country.

### Results

The complex bacteriologic exams have been allow the isolation of a total number of 127 non-choleric vibriion stems, the effectuated identification tests classifying the isolated stems in 3 species: most of stems belong to *Vibrio alginolyticus* and *Vibrio parahaemolyticus* species, while a reduced number belong to *Vibrio vulnificus* specie. The obtained result are presented in table no.2.

Table no. 2

The isolation frequency of non-choleric vibriions by zones and study periods

Year of study	The isolation frequency of non-choleric vibriions								Yearly prevalence / Area	
	South and southeast areas of downstream		Lake's and stagnant waters area		Danube Delta area		Seaside of Black Sea area			
	No. of isolated stems	%	No. of isolated stems	%	No. of isolated stems	%	No. of isolated stems	%	No. of isolated stems	%
1997	3	3.70	2	1.96	2	3.51	6	3.61	13	3.20
1998	5	5.95	5	4.59	7	13.21	12	7.06	29	6.97
1999	2	2.56	2	2.04	2	2.78	8	4.39	14	3.26
2000	0	0	2	1.79	3	4.41	7	3.76	12	2.69
2001	1	1.22	3	2.80	4	7.02	7	4.17	15	3.62
2002	4	.94	6	5.13	7	12.07	14	8.19	31	7.26
2003	1	1.22	2	1.75	2	3.34	8	4.73	13	3.06
Entire period	16	2.82	22	2.90	27	6.35	62	5.12	127	4.29

### Discussion

From these areas the vibriions are took over by different animal species that are multiply into sweet waters (Danube Delta and flowing of Danube to Delta), where the excess of nutritive resources (brought by silts of rivers that flow to Danube) permits the abundant evolution of plankton and implicit of vibriions. The low incidence of vibriions into running waters (Siret, Ialomi a, Prut and downstream area of Danube) could be explained by the lack of necessary conditions for evolution of these bacteria (absence of salt), stems that are isolating, being probably brought by the fishes and shell-fishes in migration. This hypothesis could be

demonstrated only by epidemiological analyzing of isolated stems to make a "map" of non-choleric vibriion's movement into different types of waters.

### Conclusion

1. By complete bacteriologic analysis of 2963 water samples, harvested from South and Southeast Romanian areas, it has been isolated a total number of 127 bacterial stems, identified belonging to *Vibrio* genus like non-choleric species
2. The identification exams practiced to the isolated stems permitted to classify them into 3 species: *Vibrio alginolyticus*, *Vibrio parahaemolyticus* and *Vibrio vulnificus*.
3. The statistical analysis of isolation frequency on studied areas concluded that the highest incidence is present in Danube Delta (6.35 %) and seaside of Black Sea (5.12 %), the others areas exposing an average incidence of 2.90 %.
4. The statistical analysis of yearly isolation prevalence on non-choleric vibriions has been permitted to develop the hypothesis of cyclic evolution of non-choleric vibriions, with a period of 4 years long (in the fourth year it's reach an incidence of 6.97 % - 7.26 %), in the rest of years the incidence is kept to an average of 2.69 % - 3.62 %.

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