

The rotifer, *Brachionus rotundiformis* Tschungunoff isolated from Cochin backwater, Kerala.

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Abstract

The rotifer, *Brachionus rotundiformis* along with a smaller strain were isolated for the first time from Cochin backwater. The newly isolated *B. rotundiformis* has a length range of 98-210 microns showing a modal size of 168 microns, while in the smaller strain the length ranged from 70-168 microns with modal size at 140 microns. The lorica width to length ratio for *B. rotundiformis* is 0.7 and that for smaller strain 0.8. The smaller strains are of much use for feeding fish larvae especially those having small mouth size.

The rotifer, *Brachionus plicatilis* is an important and indispensable live feed for the success of any finfish hatchery. Two morphotypes, large or L and small or S type *B. plicatilis* are known (Fu *et al.*, 1991 a, b). From India, detailed studies on these two morphotypes from brackish waters of southern Kerala were carried out by Gopakumar (1998). Recently, L and S - type *B. plicatilis* have been designated as *B. plicatilis* O. F. Muller and *B. rotundiformis* Tschugunoff respectively (Segers, 1995). Very recently, a still smaller morphotype of *B. rotundiformis* has been isolated from natural populations of Thailand, Fiji Island, etc. and they are designated as super small strain or SS strain. The different aspects on morphology and reproduction of the strains were studied by Fushimi (1988), Kugai *et al.* (1990) and Lin (1993). In Taiwan, selection of SS strain and its rearing conditions have been investigated by Su *et al.* (1994); while Hagiwara *et al.*, (1995) examined the

morphology, reproduction, genetics and mating behaviour of small, tropical marine *Brachionus* strains. From India, smaller strain of *B. rotundiformis* is observed from the brackishwater areas of southern Kerala (Gopakumar, 1998; Rani Mary George, *Pers. Comm.*) and there are no reports on isolation of the smaller strain of *B. rotundiformis* from Cochin backwater system and this is the first report of its kind.

Author is deeply indebted to Prof. (Dr.) Mohan Joseph Modayil, Director, C.M.F.R.I.; Dr. M. Rajagopalan, Principal Scientist & Head of F.E.M. Division and to Mrs. Grace Mathew, Principal Scientist & Scientist-in-Charge, F.H.L., Thoppumpady for the facilities and encouragements for carrying out this work.

Material and methods

The species along with the smaller strain is noticed in the natural population available in different canals joining the Cochin

backwater system. The isolation of *B. rotundiformis* (Fig. 1) was carried out from Puthuvype and the smaller strain is isolated from Narakkal (Fig. 2) which are the two canals quite near to the barmouth. At Narakkal Prawn Culture Laboratory (NPCL), the culture of *B. plicatilis* has been undertaken by Muthu (1983). Method adopted for the isolation of these two strains is described below. Live plankton samples were collected from the canals using a conical plankton net having a mesh size of 40 microns. The samples were brought to the laboratory and fed with the algal, *Nannochloropsis oculata*. After 2 days,

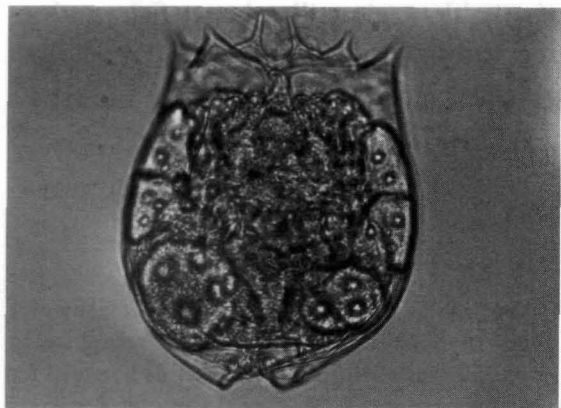


Fig. 1. *Brachionus rotundiformis*

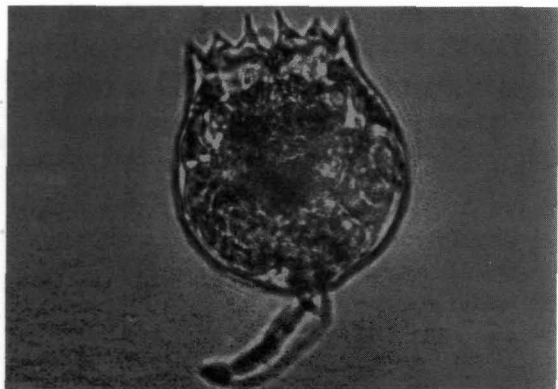


Fig. 2. Smaller strain of *Brachionus rotundiformis*

the culture was filtered to remove other planktonic organisms and fed with the same algae. Within 3-5 days a reasonable concentration of the strain became available in the culture flask. At this time, isolation was attempted. A small portion of the live culture was kept under a binocular microscope and one probable specimen of the required strain was taken and introduced into a 10 ml glass tube containing *N. oculata*. This process is repeated and a minimum of 10 such tubes were set up for each strain separately. These were kept under illumination for 14 hours per day. When a good concentration of rotifers were observed in each tube, this is further upscaled into 25ml glass tubes and then to 1 litre conical flasks. The length and width measurements of 50 specimens each at random were taken. The length range, modal size and width to length ratio were estimated. Out of these, the culture from one flask only was taken for further upscaling to make sure that it is the correct strain developed from a single individual.

Results and discussion

The length measurements of 50 specimens of *B. rotundiformis* selected at random from the isolated strain are given in Table 1.

It is evident that this population showed a length range of 98-210 microns with a modal length at 168 microns. Along with the length measurements the corresponding width of all the 50 specimens were also measured. From this, width/length ratio of each specimen was computed and average of these equalled to 0.7.

Table 1. Length composition of large strain and super small strain of *B. rotundiformis*

Large strain			Super small strain		
Length (microns)	No.	%	Length (microns)	No.	%
98	1	2	70	1	2
112	2	4	84	1	2
126	4	8	98	2	4
133	1	2	112	5	10
140	4	8	126	6	12
147	2	4	140	19	38
154	4	8	154	10	20
168	11	22	168	6	12
175	5	10			
182	6	12			
189	3	6			
196	5	10			
210	2	4			
Total	50	100	50	100	

The length measurements of 50 specimens at random from the selected flask of smaller strain of *B. rotundiformis* were also taken. The length ranged from 70-168 microns and modal size was at 140 microns (Table 1). The width of the same 50 specimens were measured, the width to length ratio of each specimen calculated showed an average value of 0.8 which indicated a more rounded lorica for the smaller one compared to the other strain. Moreover, the same population showed a modal size at 126 microns at tube culture level. As the culture was upscaled and kept for a few weeks the modal size increased to 140 microns. This increase in modal size may be due to culture conditions like temperature, salinity, feed type, feed concentration, etc. Su *et al.* (1994) reported that *B. rotundiformis* have a length range of 150-

205 microns and that of SS-strain 94-163 microns. Lim (1993) stated that *B. rotundiformis* have a mean lorica length of 162 microns and that for SS-type is 142 microns. He also stated that the lorica width to length ratio was higher in the SS-type rotifer (0.8-0.81) than that in the S-type (0.71-0.74). These findings were in agreement with the present observations. Hence, the newly isolated smaller strain can probably be the Super small or SS-strain. Size of rotifer strain is very important as different finfishes and developmental stages within species prefer different food sizes. Hence, identification, isolation and culture of suitable strain will enhance fish production through culture practices.

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