The rotifer *Brachionus plicatilis* has been widely used as live to fish larvae since it was introduced in Japan in the 1960`s. However, very little n-3 highly unsaturated fatty acids are synthesised by the rotifer, and must therefore be enriched in order to satisfy requirements of the fish larvae. Several studies have shown that dietary phospholipids increase the efficiency of the digestion process in fish larvae and are beneficial for growth and survival of the larvae. The main objective of the present study was to investigate the effects of different enrichments on the rotifers, especially with regard to lipid class composition and the ability to control the fatty acid composition in two lipid classes (phospholipids and triglycerides).

The rotifers used in this study were long term enriched (7 days) and short term enriched (up to 72 hours) with different diets; *Isochrysis galbana*, *Tetraselmis* sp., cod roe, oil emulsions (Super Selco; Inve, Be) and yeast/oil emulsions (Super Selco; Inve, Be). In addition the effect of starvation on rotifers was investigated.

- A positive correlation between the lipid content in rotifers and the feed was observed. Low lipid diets resulted in high relative levels of phospholipids and low relative level of triglycerides in the rotifers.
- For all the diets there was greater variation in the fatty acid composition of triglycerides compared to in the phospholipid fraction in the rotifers. In addition, a higher relative level of polyunsaturated fatty acids was found in phospholipids compared to triglycerides, except for short time enriched rotifers with oil emulsion.
- The fatty acid composition in the triglycerides of rotifers was better correlated to the composition in the diets than it was for the phospholipid fraction. Lower relative levels of DHA (22:6 n-3) were found in the phospholipids than in the triglycerides, while EPA (20:5 n-3) was approximately equal. As a result the DHA/EPA ratio was higher in the triglycerides than in the phospholipids.
- The use of microalgae resulted in increased nitrogen content per individual rotifer and an increased protein level.

⇒ These results show possibilities also to adjust the fatty acid composition in the phospholipid fraction of rotifers through selection of diet and enrichment length.

**Contents of saturated, monounsaturated and polyunsaturated fatty acids (% of total fatty acids) in phospholipids (PL) and triglycerides (TG) in rotifers enriched up to 24 and 72 hours. In two trials separated by solid and broken lines. FA: Fatty Acids.**