

## The use of phosphorus in feed of fish farming

O. Malý, J. Mareš, T. Brabec, R. Kopp

Phosphorus is one of the most important macroelements in the organism. In plants is almost 80% of the phosphorus presented in the form of phytic acid, or phytate. Phytate is very badly digested and utilization of phytate animals is markedly influenced by the presence of phytase enzymes. The function and effectiveness of these enzymes is dependent on the temperature and pH in the digestive tract of fish. These enzymes are now commonly industrially produced by microorganisms and added to the fish diet. The high amount of undigested phosphorus is excreted and this significantly increases eutrophication..

In this study we monitoring the quantity of phosphorus excreted to water and digestibility of phosphorus. Next time, we followed quantity of phosphorus included in sediment and nonsedimented excrements. Test was started in fishfarm Pravikov in two flume, which were deployed rainbow trout with same origin. Two different diets were selected to the test. Diets were made by Danish company Biomar. First diet was EFICO Enviro 920 and second diet was ORBIT 929. Both diets have same content of phosphorus 0,9%. Results of the study showed that digestibility of phosphorus in ORBIT 929 was 85% and Enviro 920 was only 79%. Biomar company however say, that digestibility of phosphorus achieves 61% in their diets, which is significantly lower than observed value in this study. From the viewpoint of sedimentation excrements was observed that using Enviro 920 sedimented 92% excrements and using ORBIT 929 sedimented 97% excrements. These results are very positive because the load of biofilter is lower. Results of this study are consistent with the information reported by Biomar company, which states, that using ORBIT 929 diet. Digestibility of phosphorus from ORBIT 929 diet is better than Enviro 920. It has good effect to economy and environment.

### Acknowledgement

The study was supported by projects NAZV (QJ 1210013).

**Keywords:** Phytate, phytase, microbial phytase, fish nutrition

Bc. Ondřej Malý, prof. Dr. Ing Jan Mareš, Ing. Tomáš Brabec, Ph.D, doc. Ing. Radovan Kopp, Ph.D. Ústav zoologie, rybářství, hydrobiologie a včelařství, Mendelova univerzita v Brně, Zemědělská 1, 613 00 Brno, [malik.srs.vodnany@seznam.cz](mailto:malik.srs.vodnany@seznam.cz), [mares@mendelu.cz](mailto:mares@mendelu.cz), [brabto@seznam.cz](mailto:brabto@seznam.cz), [fcela@seznam.cz](mailto:fcela@seznam.cz)