Gorgan University of Agricultural Sciences and Natural Resources

*Journal of Utilization and Cultivation of Aquatics*
*Vol. 10(3), 2021*
*http://japu.gau.ac.ir*
*DOI: 10.22069/japu.2021.18796.1574*

# Study on hematological and biochemical indices of common carp (*Cyprinus carpio*) in exposure to different concentrations of polystyrene nanoplastic

**A.R. Mehri[1], S.A.A. Hedayati[*2], H. Mohammadi Azarm[3], A. Jafar Nodeh[4] And S. Abarghoui[5]**

[1]M.Sc. Student, Dept. of Fisheries and Aquatic Ecology, Faculty of Fisheries and Environmental Sciences, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran,
[2]Associate Prof., Dept. of Fisheries and Aquatic Ecology, Faculty of Fisheries and Environmental Sciences, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran,
[3]Associate Prof., Dept. of Fisheries, Faculty of Natural Resources and Marine Sciences, Khorramshahr University of Marine Sciences and Technology, Khorramshahr, Iran,
[4]Ph.D. of Fisheries, Dept. of Aquaculture, Faculty of Fisheries and Environmental Sciences, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran,
[5]Ph.D. Student, Dept. of Aquaculture, Faculty of Fisheries and Environmental Sciences, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran
Received: 01.23.2021; Accepted: 04.28.2021

## Abstract

Small plastic particles are known as emerging pollutants and this has led to the development of studies in this field. Todays, many studies have examined the effects of microplastics on living organisms and aquatic organisms, but fewer studies have been conducted on the effects of nanoplastic on organisms; However, there is still no comprehensive information on the effects of these substances on living organisms and humans. The aim of this study was to investigate the hematological and biochemical responses of common carp in exposure to polystyrene nanoplastic. 84 common carp with an average weight of 30±5.1 were distributed in 4 food treatments (control with basic food and without nanoplastic, treatments containing 0.1, 0.5 and 1 ml of nanoplastic sprayed emulsion styrene on diet for 28 days. At the end of the experimental period, serum samples were collected to investigate some biochemical and hematological indices. Different concentrations of nano polystyrene plastic despite the increasing trend, red blood cell count, hemoglobin, hematocrit, MCV, MCH, MCHC, lymphocyte count, neutrophil, monocyte, basophil and eosinophil and serum biochemical indices, such as albumin, albumin. Serum had no significant effect ($P>0.05$), but the level of white blood cells and glucose at a concentration of 1 ml (highest concentration) was significantly higher than the control group ($P<0.05$). Finally, higher concentrations of polystyrene nanoplastic are likely to increase stress and inflammatory responses in common carp.

***Keywords:*** Blood and Biochemical indicators, Common carp, Polystyrene nanoplastic

*Corresponding author: hedayati@gau.ac.ir