TOXIC EFFECT OF AQUEOUS EXTRACT OF GARLIC ON PROTEIN CONTENT IN FISH CHANNA PUNCTATUS.

Dube K.V* and Mali R. P.

*P.G. Department of Zoology, Yeshwant Mahavidyalaya Nanded-431603, India
E-mail of Corresponding Author: kaushaldubey2004@gmail.com

Abstract
In the present investigation, the effect of sub lethal concentration of the garlic aqueous extract on fish Channa punctatus were studied after 24 hrs, 48 hrs, 72 hrs and 96 hrs exposure respectively. Different concentrations of garlic (10 ppm/lit, 15 ppm/lit) used against Protein content of fish and results showed the gradual decrease in the protein content, ranging (106.14 – 91.65 mg/gm) for 10 ppm/lit for (24 hrs – 96 hrs) and (103.90 - 88.13 mg/gm) for 15 ppm/lit respectively

Keywords: Garlic, protein content, Channa punctatus

1. Introduction
Weed fishes and predatory fishes contribute a serious problem for fish culture practices in India. It thus affects the yield. To address this issue, the use of synthetic pescicides has been employed commonly in many aquaculture farms. A large number of compounds of various classes that, have insecticidal, piscicidal and molluscsicidal properties have been observed by Singh 12. A number of compounds like tannins, alkaloids, alkyl phenols, terpenoids, saponins etc. which are found in several plants of different families with piscicidal activities are used to control of fish 11,12,13.

Due to their long term persistence in the aquatic systems, it gets accumulated in the fish body. It adversely affects the quality of fish and their status due to contamination of aquatic environment. Studies are being carried out on the feasibility of using biopesticides or plant extract to overcome this problem. Nowadays, the use of medicinal plants has become an effective alternative for synthetic pesticides and fertilizers. In the present investigation, the toxicity of aqueous extract of garlic has been observed on Protein content expressed as mg/gm in fish Channa Punctatus. It is an important food fish and is widely distributed across the Indian sub-continent.

2. Materials and Methods
2.1 Experimental animal: Healthy and live specimen of fish Channa punctatus were collected from the local fish market. The fish was brought to laboratory and then properly washed in tap water. They were treated with 0.02% KMnO4 solution to remove any type of microbial infection. Before experimentation, only normal un infected healthy fish were selected for the experiment and were transferred into glass aquaria containing 25 litre of chlorine free water for acclimatization. The determination of LC50 value was analyzed statistically by log dose/probit regression line method 5

2.2 Preparation of aqueous garlic extracts: The cloves of Allium sativum were collected from the local market of Nanded city. Plant material was dried and ground. To prepare the aqueous extract, the powder was dissolved in distilled water at a concentration of 5 gm per litre for 24 hours at room temperature. The mixture was filtered and the extract (5 gm/l) was used immediately in the experiments in different dilution.

3. Result
The results observed in the present investigation showed significant changes in the protein content in the muscle of fish Channa punctatus as shown in Table-1. The protein content mg/gm wet wgt of tissue decreased in muscle from 106.14 mg/gm to 91.65 mg/gm for 24 hrs to 96 hrs respectively was recorded in 10 ppm of garlic aqueous extract concentration similar decrease in protein content mg/gm from 103.90 mg/gm to 88.13 mg/gm for 24 hrs to 96 hrs respectively was recorded in 15 ppm of garlic aqueous extract concentration.

4. Discussion
In present investigation the protein content of muscle was decrease significantly. A decrease in the protein content mg/gm for both 10 ppm and 15 ppm concentration is due to garlic toxicity and exposure time(Table & Fig 1,2). The decrease in protein content mg/gm has been reported in Channa punctatus after exposure to chlorophyritos 8,12 and in Clarias bactatus after exposure to Sevin 7.
Tiwari et al.\(^9\) Reported that the decrease in serum total protein in snake head fish *Channa punctatus* exposed to sub lethal concentrations of lattices of *Euphorbia royleana*. Ravichandran et al.\(^9\) reported depletion of protein due to proteolysis after exposing *Oreochromis mossambicus* to nominal concentrations of phenol. Bradbury et al.\(^2\) Pointed out that the decreased protein content might also be attributed to the destruction or necrosis of the cells and consequent impairment in protein synthesis machinery.

### Table 1: Protein content (mg/gm) in muscle of *Channa punctatus* after garlic aqueous extract treatment

<table>
<thead>
<tr>
<th>Conc. in ppm</th>
<th>Control (Mean ±S.D)</th>
<th>24 hrs (Mean ±S.D)</th>
<th>48 hrs (Mean ±S.D)</th>
<th>72 hrs (Mean ±S.D)</th>
<th>96 hrs (Mean ±S.D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ppm</td>
<td>112.50 ± 2.09</td>
<td>106.14 ± 3.07</td>
<td>100.96 ± 2.69</td>
<td>94.44 ± 1.02</td>
<td>91.65 ± 0.64</td>
</tr>
<tr>
<td>15 ppm</td>
<td>110.27 ± 1.44</td>
<td>103.90 ± 3.15</td>
<td>96.73 ± 1.45</td>
<td>92.54 ± 3.88</td>
<td>88.13 ± 1.28</td>
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S.D. = Standard deviation, ppm= Part per million.

### References