



Infected Snail and Non-Infected Snails shows Biochemical contents (Proteins) changes in various parts of *Melania tuberculata* and *Melania scabra* At Gangapur Dam and Godavari River Nashik.

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Abstract

The Fresh water snails found in Gangapur Dam and Godavari river .The snails are mostly affected from trematodes at the rainy seasons in research study area the snails are observed under the patency period in laboratory a specific aquatic environment. The snails are observed up to three days, the infected Snails are shows morphological changes with size and colour of the shell .There are many trematodes larva emerge out in this observation of infected snails. While non infected snails are normal in behavior with no change in morphology. Infected snail shows change in protein contain in various parts of body like foot, hepatopancreas, mantle, and Gonads in Male and female. On infected snails shows normal value of protein and infected snails shows decline protein contain in various phases of infection that is initial phase of patency, peak phase of patency, post phase of patency.

Key words: *Melania tuberculata*, *Melania scabra*, proteins, Biuret method, Infected Snail, Non-Infected Snails, patency.

Introduction

According to infection to the intermediate host snail by the trematode larva cercariae redia and metacercariae parasite host association. Population density of parasite killed the host. (Smyth 1976). The degree of metabolic dependence and pattern of harm parasitic association host results in death lethal density. Accumulation of lipid, polysaccharide, and metabolism system find out mortality of the host. (Criese 1966), Martin and Gaddards (1966). There are number of investigators among the freshwater mollusks by biochemical contents such as carbohydrates, glycogen, lipid, proteins, amino acids show the effects on and in the body of host snails *Melania tuberculata* and *Melania scabra*. Meenakshi (1956) studied seasonal variation of glycogen in *Pila*. The larval trematodes are utilizing all these

biochemical contents for growth and development in the body of host snails. Suckers are useful for the suck that type of nutrients. (Sminna 1972, Meuleman 1972 and De Jong Brink 1973 Severe infected snail's biochemical content carbohydrate, protein, glycogen, amino acids, lipids, proteins accompanied dynamic changes in host survival behavior defence immune function, nutrition, metabolism and reproduction. (Thompson 1997) Ernest Baldwin published 1937 nitrogen catabolism intake of protein animal provided amino acids in excess of amounts required for synthesis of new protein sustain protein turn over. In order to oxidize the carbon skeleton of these amino acids α amino acids first removed as ammonia. There are three end products in nitrogen catabolism in animals are ammonium ion, urea and uric acids. In molluscas urine formation takes place in glandular kidney in Melanoid snails are shows the ultrafiltration. (Skelding 1973, Khan and Saleuddin 1979). The infection of cercariae to the kidney cell the ultrafiltration disturbed and snails release the excess material of ammonium uric acid. Nutritional studied with trematode infected gastropod molluscas more definitive. Accelerated growth and gigantism many parasites host relationship.

Material and Method.

In laboratory work snails are collected from various localities of water reservoir during the study period from June 2022 to 2023 at the beginning. This period snails are collected in the laboratory. After collection of snails first washout with tap water and dechlorinated. Infected snails are sorted with the help of morphological study and behavioral activities of the snails. There are two types of snails in present study *Melania tuberculata* and *Melania scabra*. The size of snail and color is mentioned for the identification of infected intermediate host snail. The batches of non-infected and infected snails are separated and observed under the laboratory inspections. The total periods are 7 days for observation of releasing cercariae and emerging cercariae from the infected host snails.

In this period there are also another species of host snail we have to study for complete the present study material *Melania tuberculata* and *Melania scabra*. All the collected snails comparatively studied by micro-observation with their morphology of shell, size of shell, color of shell and size of the snails. The data given with month wise early in the year for observation table.

In the laboratory experiments snails are detected and separate the tissue body in separate watch glasses. The experiments carried on this tissue material for estimation of , proteins. The tissue was dried in the thermostat oven adjusted at 65–70-degree Celsius in order to remove humus from tissue. The oven dried tissues were grinded in order to get prepared dry powdered form and then subjected to biochemical analysis.

Estimated of proteins by Biuret method:**Chemicals****Biuret Reagent:**

3.75 gm of sodium + 0.75 gm of sodium potassium tartrates + 0.185 gm of copper sulphate added in 125 ml of distilled water.

OR

3.75 gm of sodium hydroxide in 60 ml of distilled water + 0.75 gm sodium potassium tartarate + 0.185 gm of copper sulphate in 65 ml. of distilled water.

Standard stock solution of Protein (BSA):

50 gm of Bovine serum Albumen (BSA) in 5 ml of 0.1N NaOH.

Procedure:

- Take 100 mg of tissue,
- Add 5 ml of 0.1N NaOH solution
- Keep it in refrigerator for overnight.
- Homogenate the mixture
- Centrifuge it for 15minutes at 3000 rpm
- Take 1 ml of supernatant and add to it 2 ml biuret reagent.
- Take optical density at 520 nm filter.

Blank -

- 1 ml distilled water + 2 ml biuret reagent
- O.D for healthy hepatopancreas tissue – 0.28(mean value)
- O.D for infected hepatopancreas tissue – 0.15 (mean value)

Observations:-**Table 3.1 Standard of protein by biuret method**

Sr. No	B.S.A in ml	Distilled water in ml	Burette reagent in ml	Optical density
1.	0.1	0.9	2 ml	0.08
2.	0.2	0.8	2 ml	0.15
3.	0.3	0.7	2 ml	0.25
4	0.4	0.6	2 ml	0.32
5	0.5	0.5	2 ml	0.40

Effect of Parasitic Infection on protein content of different body tissues of the snail *Melania tuberculata* during different phases of period of infection

Snail Category	Amount of protein in mg/100 mg tissue \pm S.D. on dry weight basis during initial phase of patency					
	Foot	Mantle	Hepatopancreas	Gonad	Male ASO	Female ASO
Non - Infected	27.131 \pm 1.555	23.120 \pm 0.511	46.134 \pm 2.390	41.999 \pm 2.135	34.170 \pm 1.414	38.732 \pm 1.431
Infected	25.853 \pm 1.046	19.321 \pm 1.016	40.138 \pm 1.56	38.486 \pm 1.510	30.481 \pm 1.008	32.039 \pm 1.784

Amount of protein in mg/100 mg tissue \pm S.D. on dry weight basis during peak phase of patency

Snail Category	Amount of protein in mg/100 mg tissue \pm S.D. on dry weight basis during initial phase of patency					
	Foot	Mantle	Hepatopancreas	Gonad	Male ASO	Female ASO
Non - Infected	27.432 \pm 1.857	24.190 \pm 1.677	45.921 \pm 2.192	42.812 \pm 2.087	33.909 \pm 1.170	39.511 \pm 1.082
Infected	25.019 \pm 1.001	15.599 \pm 0.886	35.832 \pm 1.998	34.531 \pm 1.987	28.155 \pm 1.095	29.832 \pm 1.299

Amount of protein in mg100 /mg tissue \pm S.D. on dry weight basis during post phase of patency

Snail Category	Amount of protein in mg100 /mg tissue \pm S.D. on dry weight basis during post phase of patency					
	Foot	Mantle	Hepatopancreas	Gonad	Male ASO	Female ASO
Non - Infected	27.618 \pm 1.038	24.017 \pm 1.898	45.895 \pm 2.251	41.319 \pm 2.637	33.315 \pm 1.655	38.912 \pm 1.771
Infected	23.329 \pm 1.109	19.253 \pm 0.523	28.224 \pm 1.397	22.946 \pm 1.235	25.555 \pm 1.292	27.549 \pm 1.913

Conclusions & Result

Maximum amount of protein content (45.136 \pm 2.540) was present in the non-infected hepatopancreas and minimum amount in the (40.138 \pm 1.56) infected snails so the total protein content is less in infected snail during patency period of infected snails due to larval parasitic infection. And Maximum amount of protein content (45.921 \pm 2.192)

Was present in the non-infected hepatopancreas and minimum amount in the (35.832 \pm 1.998) infected snail so that total protein content is in non-infected snail during peak phase of patency. Maximum amount of protein content (45.895 \pm 2.251) was present in the non-infected hepatopancreas and minimum amount in the (28.224 \pm 1.397) infected snails so the total protein content is less in infected snail during post phase of patency .as well as protein content is also reduced in foot and mantle region in infected snail at peak and post phase of patency.

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