International Journal of Zoology Studies
ISSN: 2455-7269
Impact Factor: RJIF 5.14
www.zoologyjournals.com
Volume 2; Issue 5; September 2017; Page No. 78-80

Changes in the RNA Content of gill, gonad, Digestive gland, and foot tissues of *Lamellidens marginalis due* to 5-fluorouracil toxicity

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Abstract
In the present study of RNA Contents of gill, gonad, Digestive gland, and foot tissues in *Lamellidens marginalis* shows significant decrease in gill from 2.23±0.059 to 1.96±0.109 * (-12.107) for 10th day and on 20th day. There is significant decrease from 1.75±0.113 to 1.31±0.102** (-19.714) and gonad shows significant and decrease from 8.16±0.951 7.16±0.312 (-12.254) an 10th days and and 20th days there is a significant decrease from 7.33±0.654 to 6.00±0.328** (-18.144). Next tissues in digestive gland shows significant decrease in from 5.38±0.145 to 4.61±0.241* for 10th day and on 20th days significant decrease from 4.61±0.451 to 3.33± 0.316*and last one which tissues of foot shows significant and decrease from 8.97±0.974 to 8.20± 1.123 ^{NS} on 10th days and on 20th days there is a significant decrease from 8.69±0.874 to 7.72± 1.101 ^{NS} on 20th day. This is due to toxicity of 5-Fluorouracil and changes of RNA content on fluctuation or mobilization of tissue in the cellular metabolism.

Keywords: RNA content, *Lamellidens Marginalis*, 5-fluorouracil

Introduction
RNA is capable of carrying out a multitude of diverse biological functions. Many biologically active RNA have to adopt intricate 3D structures that rival protein structures in their complexity to be functional in a cellular environment. 5-Fluorouracil and Heavy metals may interact with RNA polymerases which causes adverse effect. RNA polymerase must bind site specifically to its RNA template, binds its nucleotide and primer substrate, and form new phospho diester bond in elongating the growing RNA. Zinc ion appears to be essential for the function of both RNA polymerase and DNA topoisomerase, (Giedroc and Coleman, 1989) [2]. Biochemical changes such as inhibition of enzymes, metabolic disorder, genetic damage, hypertension and cancer. (Underwood, 1971; Zemasky, 1974; Lucky and Venugopal, 1977) [6, 4]. RNA is the polymer of the ribonucleotides held together by 3', 5' phosphodiester bridge. RNA has certain similarities with RNA structure.

Discussion
Divalent metal ions in general and Mg++ with its favorable charge/size ratio in particular (Woodson, 2005) play an important role in RNA folding. Mg++ ions not only stabilize the final structure through either direct coordination with negatively charged groups of the RNA or in a water-mediated interaction with the hex ahydrated ion (Mg (H2O) 6++). They also influence the rate of folding, stabilize folding intermediates or destabilize alternative conformations (Wu and Tinoco, 1998) [8]. The effect of cisplatin damage on RNA pol II elongation was investigated using site-specifically-placed cisplatin adducts. In effective block to RNA pol. II elongation, inhibiting the polymerase by 80%. In contrast, RNA pol. II completely bypassed the cisplatin. These studies suggest the inhibition of RNA pol. II transcription following the treatment of cells with cisplatin (Carleen Cullinane *et al.*, 1999) [1]. In the light of above fact that *Lamellidens marginalis* was selected for biochemical study under sublethal concentration of 5- fluorouracil for the subchronic (10 days) and chronic (20 days) period.

Materials and Methods
Attempts have been made in this study to select Fresh water bivalves, *Lamellidens marginalis* were collected from of bindusara dam which is about at the distance of 20 K.M. away from Beed City of Maharashtra state. First they are made acclimatized to laboratory condition and they are washed. The water in the aquarium was changed regularly after every 24 hours. After the acclimatization, bivalves, *Lamellidens marginalis* were divided into two groups with equal numbers of animals They were kept in seprate aquarium for 10 and 20 days out of remaining one groups treated by chronic Concentration LC50/10 value of 96 hrs.). Of 5-fluorouracil (3.716ppm). On 10th and 20th day of exposure, bivalves from each experimental group were sacrificed and gill and gonad, were removed. These tissues were dried in oven at 75 0C to 80 0C till constant weight was obtained and blended into dry powder. These powders were used for the estimation of biochemical components of RNA to observe efficacy of 5-fluorouracil.

Procedure: Estimation of RNA
RNA content of the tissue was estimated by following Orcinol method of Volkin and Cohn (1954). 10 mg of dry tissue powder was homogenized by adding 10ml distilled water. Then it was centrifuged at 3000 rpm for 10 minutes. The supernatant contains RNA. 1ml supernatant was taken in test

tube and 3ml Orcinol reagent was added. Then the mixture in the test tube was boiled in boiling water bath for 15 minutes. After boiling the solution in the test tube was allowed to cool. The optical density of the colour developed was read at 665 nm filter. Array of increasing concentration of standard RNA solution was processed in the same way and the optical densities were read to calculate the concentration of RNA from the sample powder.

Results

The above experiment has concluded that the results obtained on 10 &20 days of Gill, gonad, digestive gland and foot tissues were results are observed by impact with 5-fluorouracil are as Follows.

10 Days treatment teriod (Subchronic)

The gill, gonad, digestive gland, and foot of *Lamellidens marginalis* shows a significant ($P < 0.01$) decrease. The gill shows control 2.23±0.059 to treated with 5-fluorouracil 1.96±0.109* mg/g wet tissues in treated. The total RNA content in gill, gonad, digestive gland, and foot corresponds to an decrease by 12.10% to 12.54% The profile of total RNA content in gonad shows significant decrease from 8.16±0.951 to 7.16±0.312* mg/g wet tissues in gonad respectively. The gonad shows a decrease 12.54%. The digestive gland and foot of *Lamellidens marginalis* shows a significant ($P < 0.01$) decrease. The digestive gland shows control 5.38±0.145to treated with Cisplatin 4.61±0.241*mg/g wet tissues in treated. The total RNA content in digestive gland and foot corresponds to an decrease by 14.31% to 27.76**%** The profile of total RNA content in foot shows significant decrease from 8.97±0.974 to 8.97±0.974 mg/g wet tissues in gonad respectively. The gonad shows a decrease 10.67%. in all four types of tissues such as gill, gonad, digestive gland, and foot of *Lamellidens marginalis* significantly decreases in RNA content on 10^{th} as recorded. And 20^{th} days are shown in below the following.

20 Days treatment period (Chronic)

The total RNA content of gill, gonad, digestive gland, and foot of *Lamellidens marginalis* has been assessed. The result obtained 20th day after treating gill with the dose has shown significant in from 1.75±0.113 to 1.31± 0.102**mg/g wet tissues. Secondly the result of gonad treated with 5-fluorouracil is significant decreases 7.33±0.654 to 5.00 ± 0.358** mg/g wet tissues respectively. Similarly 10 days sub chronic exposure of treatment as compare to 20 days exposure shown that they are both tissues reveals significant depletion in RNA content. The total RNA content of digestive gland and foot in control *Lamellidens marginalis* has been assessed. The result obtained 20th day after treating digestive gland with the dose has shown significant in from 4.61±0.451to 3.33± 0.316*mg/g wet tissues. Secondly the result of foot treated with 5-fluorouracil is significant decreases 8.69±0.874 to 7.72± 1.101 ^{NS}** mg/g wet tissues respectively. Similarly 10 days sub chronic exposure of treatment as compare to 20 days exposure shown that they are both tissues reveals significant depletion in RNA content. In the present comparative study digestive gland and foot shows significant elevation in to the RNA level depletion in the exposure periods. This reveals a large variety of chemotherapeutic drugs used to treat cancer, but unfortunately many organic compounds shows limited efficacy problems of delivery and development of 5-fluorouracil is a conventional chemotherapeutic agent that binds co-valently to purine RNA bases and cellular apoptosis (Kerbel 1997) [3]. A better understanding of the downstream cellular targets of 5-fluorouracil provides information on its mechanism of action and help to understand the mechanism of drug resistance. Malignant neoplasm including sarcomas. 5-fluorouracil causes cytotoxicity by RNA injury by means of RNA platination. The distinct types of the RNA with their cellular compositions are messenger RNA 5-10%, Transfer RNA 10-20%, and ribosomal RNA 50-80 %. (Satyanarayana, 1999) [5].

Table 1: Alteations in the RNA Content mg/100mg dry weight+ S.E. in gill, gonad, digestive gland, and foot tissues of *Lamellidens marginalis* Treatment with 5-fluorouracil.

Sr No.	Tissues	Days	Control	Experimental	Student 't' test 'p' value	% increases (+) or decreases (-)
1	Gill	15	2.23±0.059	1.96±0.109*	P < 0.01	12.10%
		30	1.75±0.113	1.31± 0.102**	P < 0.01	19.14%
2	Gonad	15	8.16±0.951	7.16 ± 0.312*	P < 0.01	12.54%
		30	7.33±0.654	5.00± 0.328**	P < 0.001	18.14%
3	Digestive gland	15	5.38±0.145	4.61±0.241*	P < 0.01	14.31%
		30	4.61±0.451	3.33± 0.316*	P < 0.01	27.76%
4	Foot	15	8.97±0.974	8.20± 1.123 ^{NS}	P < 0.01	8.58%
		30	8.69±0.874	7.72± 1.101 ^{NS}	P < 0.001	10.01%

Conclusion

The present study indicates that effect of toxicity on *Lamellidens marginalis* in the tissue of gills, gonads, digestive gland and foot tissues were during the period 10 day and 20 days exposures of 5-fluorouracil anticancer drug toxicity to determine RNA reduced growth rate in enzymes of polymerase in RNA synthesis, which is the action of inhibit uracil base pair in subgroup of rRNA, tRNA, mRNA it has adverse effect of inhibitant of RNA transcription due to the period exposures. The toxicity of 5-fluorouracil in RNA reduced growth rate in polymerase enzymes. Then impact of toxicity determined in genetical disorders inhibit the uracil base pair in RNA. Which is the adverse effect stop RNA transcription due to the period of 10 days and 20 days exposure. but due to the minimum or balance dose of 5-fluorouracil anticancer drugs useful to the body disorders but increase the level of this dose that's the impact of toxic effect on body decrease ion concentration or nucleic acid for toxicity 5- fluorouracil anticancer drugs are finally it's the harmful action of the body.

Acknowledgement
The author express that support my college principal, Dr. H.G Vidhate, provide valuable facility for my experimental work. I will specially thankful to my college Head Dept. of Zoology Dr. Khaire B.S, Dr. Pathare G.M, and B.N. Gawade (Dept. of Chemistry) provide direct or indirect help in my research work.

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