
CHAPTER-V -

* SUMMARY AND CONCLUSIONS *

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Due to the increasing commercial importance of frogs, work was undertaken on the rate of passage of different food-items and their digestibility, and effects of different food-items on the growth rate of Rana tigrina, which is commonly found in India. During the work possibility of chitinolytic activity was indicated and therefore, experiment to detect chitinolytic activity was also undertaken.

Review of literature on the natural food of frogs shows that frogs take small moving objects as food, however, there is no further selection of food as such, as a result it is of necessity to know whether all such food-items taken are equally digestible. The study shows that earthworm is the most rapidly and best digested food-item among the naturally taken food-items. Arthropods with a thick exoskeleton containing much indigestible part have a slower rate of passage through the alimentary canal and are less digestible as the thick indigestible part of the exoskeleton possibly prevents contact between the enzymes and the digestible part of the food-item. The work has indicated an inverse relationship between the rate of passage of different food-items and digestibility i.e., the rapid the rate of

passage of a food-item better is its digestibility. It is suggested that this provides us with an index to determine the digestibility of different food-items for Rana tigrina and to determine its diet for better maintenance and growth.

The "in vivo" observations on the rate of passage and digestibility revealed the possibility of chitinolytic activity in Rana tigrina. An attempt was, therefore, made to detect it by "in vitro" experiments and chitinolytic activity was found to be present when extracts of gastric mucosa and pancreas were used. However, whether this chitinolytic activity is due to the presence of a chitinase has not been confirmed. The chitinolytic activity is also known to be shown in some cases by lysosomes, and it will be necessary, therefore, to attempt to purify the enzyme chitinase, if present, to be able to attribute the chitinolytic activity to this enzyme.

The study of the effect of different food-items on the growth rate of Rana tigrina has shown that in general those food-items which were found in the present work to have faster rate of passage through alimentary canal and better digestibility also contribute to better growth rate of Rana tigrina. Thus the muscle (meat) which is most rapidly digested

also contributes to maximum growth rate, followed, by ~~w~~ earthworm which has a slightly slower, rate of passage and digestibility, this is followed by cockroach which has further slower rate of passage and digestibility. However, bread although it has the rate of passage and digestibility similar to that of the earthworm, it does not contribute to the growth rate as much as the earthworm. This is suggested to be due to its qualitatively and quantitatively deficient protein content, the protein being a major constituent required for growth. It is suggested that the diet for Rana tigrina may be devised taking into consideration the findings of the present work so as to obtain its maximum growth in the shortest time possible and the findings may actually be applied during culturing of Rana tigrina in small controllable water masses where it will be possible to feed frogs artificially with such adequate diet.

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