SUMMARY

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While scanning through the anatomical, histological, histochemical and biochemical literature that is available on mollusea, published during last fifty years, keeping the gastropod - prosobranch - cypraea in mind, it was significantly stressed that there is marked paucity of literature on the mucosubstances in the prosobranch digestive tract. Majority of the literature deals with the discovery of new species and its systematic allotment in the phylum, where in various shell and redular features are considered. This critical evaluation provoked the mind to undertake the project on the gastropod - prosobranch.

It is with this view, therefore, that a detailed study of histology, histochemical localization of mucosubstances and a possible role in physiology of digestion in various organ such as buccal mass, pre-oesophagus, oesophageal bulb post-oesophagus, stomach, intestine and rectum of the digestive tract of marine snail, Cypraea arebica arebica was undertaken.

The dissertation is divided into five chapters. The first chapter enumerates the review of the morphological histological and histochemical work done on digestive tract of various gastropod - prosobranchs in general. The chapter tries to exploit the significance of present problem and also evaluates the nature of critical. observations to be done. Detailed description of the

material and the histological and histochemical techniques employed in the present investigation has been listed in chapter second. Third chaptere explains in detail the histological observations and the localization and characterization of the mucosubstances in different organs mentioned above. Efforts have been made to discuss the observations that are seen in the investigation in chapter four. Fifth and last chapter sums the concluding remarks. The last pages of the dissertation include bibliographic illustrations. The following is the brief resume of the present investigation.

Morphologically buccal complex forms the anterior digestive tract consist of buccal mass, pre-oesophagus and oesophageal bulb. Post-cesophagus ends into small knob like stomach. Both stomach and thin walled single spired intestine is masked by the midgut gland. Rectum, the terminal part of digestive tract passes along ctenidum and opens as anus without passing through heart. The upturn of preoesophagus is expected to check the return flow of food into buccal cavity.

Histologically all seven organs of digestive tract ~~are~~ seems to be formed by four layers; mucosa, submucosa, muscular layer and serosa. Invariably the mucosa-innermost lining of the tract is made up of goblets and columnar cells. A additional cell type, the granular cells is the characteristics of eesophageal bulb which is thought to be linked with some digestive secretions. Submucosa is

generally contains mast cells in oesophageal bulb, post-oesophagus, stomach, intestine and rectum. Secretion of these cells are probably related with increasing permiability of mucosa wall as in chordates. Muscular layer is well developed in buccal mass and post-oesophagus. Smoothening the function of redula is the expected function in former and peristalsis like movements in later. Stomach glands are noted in stomach submucosa and has given a probable function of secretion of digestive enzymes. Serosa the outermost layer forms the external boundry of the tract.

Histochemically glycogen is documented nearly in all cell types and considered to be the readymade source of the energy efor different cellular activities. Neutral mucins are observed in redula, goblets, submucosa and serosa of buccal mass, in goblets, columners and muscular layer of the pre oesophagus, in goblets, columners, muscular layer of oesophageal bulb, in goblets and general submucosa of post-oesophagus in columnar cells of stomach, in goblets, columnars, granulars and muscular layer of intestine and in goblets columners and mast cells of rectum. Sulfated mucins are demonstrated invariably either weakly or strongly in all types of the cell with few exceptions. Sialomucins presaence is seen in columnar cells of buccal mass, in columnar cells of submucosa and serosa of the pre oesophagus and in stomach

TABLE NO - 8.

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE BUCCAL MASS OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA.

Type of Mucosubstances	Redula	Mucosa Gob. cell	Mucosa Col. cell	Submucosa	Muscular layer.	Serosa
Glycogen	*	*	*	*	*	*
Neutral mucins	*	*	--	*	*	*
Strongly sulfated mucins	-	*	-	-	-	-
Weakly sulfated mucins	*	*	-	*	-	-
Sialomucins	-	-	*	-	-	-

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE PRE-OESOPHAGUS OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA.

Type of Mucosubstances	Mucosa Gob.cells	Mucosa Col.cells	Submucosa	Muscular layer.	Serosa
Glycogen	*	*	*	*	*
Neutral mucins	*	*	-	*	-
Strongly sulfated mucins	*	-	*	-	-
Weakly sulfated mucins	*	*	-	*	*
Sialomucins	-	*	*	-	*

TABLE NO - 9.

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE OESOPHAGEAL BULB OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA

Type of Musosubstances	Mucosa Gob. cells	Gra. cells	Col- cells	Submucosa Gen.	Mast cells	Muscular layer.	Serosa
Glygogen	*	*	*	*	*	*	*
Neutral mucins	*	*	*	-	-	*	-
Strongly sulf-ated mucins	*	*	*	*	*	*	*
Weakly sulfated mucins	*	*	*	*	*	*	*
Sialomucins	-	-	-	-	-	-	-

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE POST-OESOPHAGUS OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA.

Type of Mucosubstances.	Mucosa Goblet cells	Columnar cells	Submucosa Gen.	Mast. cells	Muscular Layer	Serosa
Glycogen	*	*	*	*	*	*
Neutral mucins	*	-	*	-	-	-
Strongly sulfa-ted mucins	*	*	*	*	*	*
Weakly sulfated mucins	-	-	*	*	-	-
Sialomucins	-	*	-	-	-	-

TABLE NO - 10.

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE STOMACH OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA.

Type of Mucosubstances	Mucosa			Submucosa		Muscular	Serosa
	Gob. cells	Col-cells	Stomach gland	Mast cells	Gen.		
Glycogen	*	*	*	*	*	*	*
Neutral mucins	-	*	-	-	-	-	-
Strongly sulfated mucins	*	*	-	*	*	-	-
Weakly sulfated mucins	*	*	*	-	-	*	*
Sialomucins	-	-	*	-	-	*	*

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE INTESTINE OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA..

Type of Mucosubstances	Mucosa			Submucosa		Muscular layer	Serosa
	Gob. cells	Col. cells	Gra. cells	Gen.	Mast cells		
Glycogen	*	*	*	*	*	*	*
Neutral mucins	*	*	*	-	-	*	-
Strongly sulfated mucins	-	-	-	*	*	-	*
Weakly sulfated mucins	*	-	*	*	*	*	*
Sialomucins	-	-	-	-	-	-	-

TABLE NO - 11.

HISTOCHEMICAL LOCALIZATION OF MUCOSUBSTANCES IN THE RECTUM OF THE MARINE SNAIL ---------- CYPRAEA AREBICA AREBICA ..

Type of Mucosubstances	Mucosa			Submucosa		Muscular layer	Serosa
	Gob. cells	Col. cells	Brush border	Gen.	Mast cells		
Glycogen	*	*	-	*	*	*	*
Neutral mucins	*	*	-	-	*	-	
Strongly sulfated mucins	-	-	*	*	*	*	*
Weakly sulfated mucins	*	*	-	-	-	*	-
Sialomucins	-	-	-	-	-	-	-

glands, muscular layer and serosa of stomach.

Probable role of these mucins are illustreted in the chapterf four. To sum up these the following are the main.

1. Lubrication of the tract.
2. Nulification of the toxicity produced by the dietary food.
3. Protection of the mucosa from the probable poisonous secretions of the injested food.
4. Fascination of effective secretions.
5. To help the effective absorption.

CONCLUDING REMARKS

Thus the achivements those were thought before the start of the investigation are successfully achieved. The present work is no way complete. I have to depend entirely upon the visually estimated intensity of staining while working for localization of mucosubstances in cellular sites and the histological work proper. Hence in the project of such magnitude some errors of fact and judgement are inevitable. But whereever there was opportunity to mention new facts or put old facts in a new light, I have frequently done this.

The animal choiced in the investigation seeks further studies in the digestive tract as well as other organ systems. Some of the directions regarding this are as follows :

1. Quantititive estimations of mucosubstances in mathematically terms by employing the bioassay studies.

2. Identification and confirmation of the mucosubstances by using chromatography and authoradiography.

3. Similarities and dissimilarities in the distribution of different mucins in different organ systems of various prosobranch of both marine and terristrial habitats with their significance.