SUMMARY

The food analysis of *Mastacembelus armatus*, *Wallago attu* and *Clarias batrachus* were carried out by weight percentage, frequency of occurrence and index of preponderance methods.

The food analysis of *Mastacembelus armatus* revealed that it consisted of crustaceans, fishes, annelids, aquatic insects, molluscs, aquatic plant materials, sand and mud particles. *Mastacembelus armatus* feeds on higher percentage of crustaceans, fishes, annelids, aquatic insects and molluscs and lower percentage of aquatic plant materials and sand and mud particles. Crustaceans and smaller fishes are dominant food items of *Mastacembelus armatus*. Thus *Mastacembelus armatus* shows carnivorous type of feeding habit.

The food analysis of *Wallago attu* revealed that it consisted of crustaceans, molluscs, aquatic insects, detritus, fishes, amphibian tadpole larvae and sand and mud particles. *Wallago attu* feeds on higher percentage of fishes, crustaceans, aquatic insects, sand and mud particles and molluscs and lower percentage of detritus and amphibian tadpole larvae. Smaller fishes and crustaceans are dominant food items of *Wallago attu*. Thus *Wallago attu* shows carnivorous type of feeding habit.

The food analysis of *Clarias batrachus* revealed that it consisted of fishes, crustaceans, molluscs, aquatic insects, aquatic plants and debris, amphibian tadpole larvae, sand and mud particles. *Clarias batrachus* feeds on higher percentage of fishes, crustaceans, and molluscs, aquatic insects and lower percentage of sand and mud particles and amphibian tadpole larvae. Smaller fishes and crustaceans are dominant food items of *Clarias batrachus*. Thus *Clarias batrachus* shows carnivorous type of feeding habit.
Study of jaws and teeth of *Mastacembelus armatus* revealed that the mouth is pointed, oblique, and horizontal crescentic cleft, sub terminal or inferior in position bounded by upper and lower labial folds and surrounded by fine but firm jaws, the upper jaw and lower jaw. The upper jaw is longer than the lower jaw and projects beyond over the lower one forming an inverted ‘y’ shaped opening. The snout is long, tri lobed and with fleshy appendage. The buccal cavity of *Mastacembelus armatus* is narrow and widens into pharynx. Its roof is formed by the base of the cranium and side walls, and the floor of the buccal cavity is formed by the urohyal and branchial arches. Pharynx of *Mastacembelus armatus* is wide, spacious and dorso-ventrally compressed arising from narrow buccal cavity, Tongue of *Mastacembelus armatus* is well developed triangular with thick mucous membrane which is affixed along the mid dorsal line of the floor of the buccopharyngeal cavity. Teeth are present on the jaws, upper and lower jaws and pharynx. They are sharp, pointed, tiny, robust, subequal, inclined inwards, villiform organised in patches. There are two set of elliptical patches of superior and inferior pharyngeal teeth directed towards the gullet. Gill rakers are absent in *Mastacembelus armatus*. In the place of gill rakers there is an uneven gill arch surface.

The snout of *Wallago attu* is depressed, spatulate and somewhat protruded. Mouth is anterior, superior, subterminal, oblique large, wide and very deeply cleft, surrounded by strong upper and lower jaws. The jaws are unequal and are provided with numerous pointed teeth. The buccal cavity of *Wallago attu* is wide and spacious. The pharynx of *Wallago attu* is dorso-ventrally compressed and is broad and wider anteriorly and narrower posteriorly. Pharynx is elevated dorsally and ventrally
so that the space between the roof and the floor is lesser as compared to buccal cavity. The roof of the buccal cavity is slightly arched and its floor is almost flat. The tongue is attached to the floor of the buccal cavity on its ventral surface. It is not capable of eversion and takes no part in the capture of prey. In *Wallago attu* ventro-lateral wall of the pharynx is perforated by gill slits and the four pairs of gill arches bear gill lamellae and the gill rakers. The gill rakers are long, pointed structures. Teeth are sharp, pointed, robust, sub-equal, inclined inwards, villiform. The buccal region bears the maxillary, mandibular and vomerine teeth and horny pad teeth. The pharyngeal region consists the pharyngeal teeth.

The head of *Clarias batrachus* is much dorso-ventrally depressed, mouth is a broad, tranverse slit at the front end of the snout, terminal surrounded by fleshy and papillated upper and lower lips. The buccal cavity of *Clarias batrachus* is wide and spacious. The pharynx of *Clarias batrachus* is more dorso-ventrally compressed as compared to *Wallago attu*. The pharynx is broad and wider. The tongue in *Clarias batrachus* is broad and depressed and free around the edges, which is affixed along the mid dorsal line of the floor of the buccal cavity. The ventro-lateral wall of the pharynx of *Clarias batrachus* is perforated by gill slits and the five pairs of gill arches bear gill lamellae and the gill rakers. The gill rakers are long, fine structures. They are present on the upper and lower jaws and pharynx. Teeth are small, multiple rowed. The buccal region bears the maxillary, mandibular and vomerine teeth and horny pad teeth. The pharyngeal region consists the pharyngeal teeth.

The study of anatomy and histology of alimentary canal of *Mastacembelus armatus, Wallago attu* and *Clarias batrachus*
revealed that alimentary canal is demarked into oesophagus, stomach, intestine and rectum. Histologically the wall of the alimentary canal of *Mastacembelus armatus, Wallago attu* and *Clarias batrachus* is observed to be composed of mucosa, submucosa, muscularis and serosa. The mucosa consists of epithelial cells, and mucous cells and is disposed into prominent wide mucosal folds, projecting into lumen. The sub mucosa is well developed consisting of small oval, round or elongated nuclei between the fibers and blood capillaries. The muscularis is a thick layer consisting of two muscle layers, circular muscle fiber layer and longitudinal muscle fiber layer. The wall of the oesophagus is comprised of inner longitudinal muscle fibers and outer circular muscle fibers, whereas, in the stomach, anterior intestine and posterior intestine the position is reversed where the longitudinal muscles are on the outer side and circular muscles on inner. The serosa forms the outermost covering.

The biochemical studies revealed the occurrence, distribution and relative activities of digestive enzymes such as glycosidases (amylase, sucrase, maltase and lactase), proteases (trypsin, chymotrypsin and pepsin) and lipases in the different regions of gut of *Mastacembelus armatus, Wallago attu* and *Clarias batrachus*. This study indicates that different digestive enzymes are produced in the different regions of the alimentary canal of *Mastacembelus armatus, Wallago attu* and *Clarias batrachus* and their alimentary canal is equipped with enzymes capable of digesting the constituents of its diet.