Observations on the anatomy, histology and histochemistry of the stomach of the vespertilionid bat *Miniopterus schreibersii* (Kuhl)

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Abstract. Both the openings of the stomach of *Miniopterus schreibersii* are directed cranially and the fundus is large and rounded. The longitudinal layer of muscles is thin but the circular layer is thick particularly at the apex of the fundic caecum. In addition to the usual types of cells, namely pepticogen cells, parietal cells, surface mucous cells and neck mucous cells, a new type of cell, the interstitial cell of the gastric mucosa, which stains intensely pink with PAS, has been identified for the first time in the gastric glands. In general there is a predominance of neutral mucus particularly in the pyloric region where blebs of mucus are seen to ooze out into the lumen. Acidic mucus are present in moderate amounts in the surface mucous cells at the apex of the fundic caecum.

Keywords. Stomach of bat; *Miniopterus schreibersii* (Kuhl).

1. Introduction

Although bats represent a group of mammals with highly specialised and unique characters and have been included in one taxonomic order—Chiroptera—they have extremely varied but specific feeding habits such as frugivorous, nectarivorous, pollenivorous, insectivorous, piscivorous, carnivorous and sanguivorous kinds (Grasse 1955). The fact that the morphology of the alimentary tract of mammals is highly adaptive and varies with the diet was mentioned by several early workers (Huxley 1865; Langley 1880; Rollet 1971; Robin 1881; Beddard 1902). In recent years considerable anatomical, histological and histochemical differences in the gastro-intestinal tract of bats have also been reported by Schultz (1965) and Forman (1971a, b, 1972, 1973). It was therefore felt that a detailed study of the alimentary canal of bats with different food habits may reveal interesting facts which may enable us to postulate a working hypothesis for understanding the relationship between the food habits and digestive physiology of bats. The present paper embodying descriptions of the anatomy, histology and the histochemistry of the stomach of *Miniopterus schreibersii* is a part of the extensive programme of study.

2. Material and methods

Adult specimens of *Miniopterus schreibersii* with body weight ranging from 10.0 to 10.8 g were collected from the Robber's cave near Mahabaleshwar in Western
Maharashtra between 1 pm-4 pm when the stomach is nearly empty. The specimens were killed by chloroform and their stomachs and a part of the duo­denum were fixed in 10% neutral formalin or calcium acetate formol or Ross­man’s fixative. After fixation, the tissues were processed for histological and histochemical study.

The sections were stained by following procedures, Ehrlich’s haematoxylin and eosin, Cason’s (1950) one step modification of Mallory-Heidenhain azan procedure. Masson’s (1923) technique for demonstrating argentaffin cells was slightly modified by employing 0·1% of potassium bromide solution instead of a solution of gold chloride.

The classification given by Spicer et al (1965) was adopted for localisation and identification of different types of mucopolysaccharides and the techniques for different types of mucopolysaccharides as given by Lillie (1976) were employed.

3. Observations

The stomach of M. schreibersii is small, widely rounded along the greater curvature. Consequently the two openings of the stomach—one into the oesophagus and the other into the duodenum—lie close to each other and both are directed cranially. Figure 1 illustrates the internal anatomy of the stomach of M. schreibersii. The cardiac vestibule is narrow at the junction of the oesophagus but becomes progressively wide caudally and towards the fundic caecum. There are no valves at the

Figure 1. Semischematic drawing to show the general anatomy of the stomach of Miniopterus schreibersii. B.gl : Brunner's glands; c.v : cardiac vestibule; duo : duodenum; f.c : fundic caecum; ces : oesophagus; py : pylorus; ph. sph. pyloric sphincter; t.st : tubular stomach; tr.z : transition zone.