

P R E F A C E

In the recent years, our Laboratory in the University Department of Zoology, Shivaji University, Kolhapur, India, has been engaged in extensive study of Brunner's glands. Though there is much data available on Brunner's glands, there are some aspects which have not been given due importance like Brunner's glands during gastroduodenal ulceration and healing from duodenal ulcers. The available data on these aspects do not give much information regarding the role played by the Brunner's glands in the natural defence of the duodenal mucosa.

The glands of Brunner are present only in mammals and lie mainly in the submucosal region of the duodenum. It is believed that the duodenum is protected from the acidic gastric juice ejected from the stomach by virtue of the alkaline secretion from these glands. The Brunner's glands of rat are rich with PAS-positive mucus glycoprotein. We have already reported that the Brunner's glands of rat are rich with PAS-positive material and β -glucuronidase. The enzyme β -glucuronidase has been reported to be present in many glandular tissues having mucosubstances and this enzyme has been reported to be involved in the metabolism of mucopolysaccharides. The glands of Brunner always showed a depletion in PAS-positive material during duodenal ulcer. So far the enzyme β -glucuronidase has not been studied in the Brunner's glands during induced duodenal ulcers, and whatever report available is from our laboratory only. Alterations in the Brunner's glands during

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induced duodenal ulcers are, however, subjected to the modes of ulcer induction in the experimental animals. There are reports on the difference in the incidence of duodenal ulcer between men and women.¹

In the light of the above literature reviewed and assumption that the Brunner's glands protect the duodenal mucosa, the present investigation was undertaken i) to find out the relation between mucus glycoprotein and β -glucuronidase ii) to understand the defensive mechanism played by the Brunner's glands in the protection of duodenal mucosa and iii) to understand the involvement of Brunner's glands in the healing process of duodenal ulcer.

For the study of Brunner's glands during normally occurring physiological disturbances such as starvation, delayed gastric emptying (accumulation² of gastric juice), hypergastric secretion, hyperacidity etc. were taken into consideration. Treatment of duodenal ulcer has been a challenge to the medicinal world and research in this line awaits diversion to find out the right choice of medicine.

The thesis is divided into nine chapters with the concluding chapter on the general discussion. The first chapter gives i) a detailed and critical account of the existing literature on the Brunner's glands and the glands during induced duodenal ulcer ii) glycoprotein and iii) β -glucuronidase. This chapter also gives an outline of the reasons that led to the present investigation. The second chapter describes the

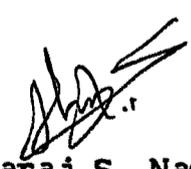
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material and methods employed in the present work. The third chapter provides the detailed account of the starvation induced changes in the stomach, duodenum and the Brunner's glands. The chapter four describes the ligation induced ulcers in the stomach and duodenum and changes in the Brunner's glands. Luminal acid induced changes in the gastroduodenal mucosa and in the Brunner's glands have been described in chapter five. Chapter six gives an detailed account of the formation of duodenal ulcers induced by an ulcerogenic agent cysteamine and describes the changes in the Brunner's glands during cysteamine induced duodenal ulcers. Chapter seven describes the healing process of duodenal ulcer treated with Ayurvedic mixture. The observations made on Brunner's glands during recovery have also been documented here. The eighth chapter describes the electrophoretic studies carried out on Brunner's glands. Changes in Brunner's glands glycoprotein and β -glucuronidase during ulcer formation have been recorded in this chapter.

The present investigation discloses several avenues for future research in the field of study of Brunner's glands during duodenal ulcer. The bibliography has been given at the end of the thesis.

I assume responsibilities for the opinions expressed in the present thesis and also for omissions and errors, if any, in the body of the thesis. I feel and hope that many of the readers both from India and abroad will find the present thesis interesting and stimulatory.

KOLHAPUR
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