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التوثيق الالكتروني والميكروفيلم

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ORGANOGENESIS AND EARLY HISTOGENESIS OF THE CAPRINE STOMACH

By

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THESIS

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Approval Sheet

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DEDICATION

To

My Family :
Father , Mother ,
Brothers And Sister.
As Well To My
Great Professors

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INTRODUCTION

INTRODUCTION

Physiologically, the ruminant stomach has the ability to convert the poor quality, low economic value food into usable nutrients of high economic value as meat and milk **(Reece, 1991)**.

Anatomically, the ruminant stomach is composed of four compartments (rumen, reticulum, omasum and abomasum). The first three compartments (proventriculus) are lined with non-glandular stratified squamous epithelium while the fourth compartment (abomasum) is lined with glandular simple columnar epithelium.

The functional aspects of any organ depend on its structural pattern and to know the latter we must study the origin of each structural units.

Among our native ruminants, the goat needs a special attention because their valuable productions of meat and milk.

Information on the histogenesis of goat stomach in the available literature are scanty **Ramkrishna and Tiwari, 1979**; **Kamel *et al.*, 1987**; **Huh *et al.*, 1994, 1995**; **Lee *et al.*, 1994**. According to our available literature the organogenesis of goat stomach was studied by **Molinari and Jorquera (1988)** with reference to very few histogenetic changes.

Hence the present study was aimed to give some detailed information on both the organogenetic and histogenetic changes occurred in the caprine stomach during the whole intrauterine life, as well as to clarify the exact origin of each gastric compartment and the relation of gastric compartments to each other and to the other abdominal organs.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

I. Organogenesis:

Bensely (1910) clarified that, the gastric primordium of ruminants is originated from the foregut and the abomasum is the only true stomach which is derived from this gastric primordium, while the forestomach (rumen, reticulum and omasum) develops as enlargements of the caudal region of the esophagus. The foundations upon which this concept is based are, (1) the epithelium of the forestomach resembles that of the esophagus (nonglandular stratified squamous) while the abomasum shows a glandular simple columnar epithelium with typical gastric glands; (2) the esophageal groove is interpreted as being a part of the esophagus with the rumen and reticulum as a lateral expansions and omasum as a caudal expansion. **Webers (1928)** found that, the rumen and the reticulum of bovine stomach are originated as a crop-like expansion from the esophagus and the omasum is derived from the abomasum as a part of the true stomach. **Favilli (1929)** supported the esophageal origin of the forestomach in ruminant and confirmed that the abomasum is only the true stomach which is homologue to the stomach of human.

On the other hand, numerous authors stated that all compartments of ruminant stomach are originated from an independent gastric primordium without any esophageal contribution, [**Pernkopf, 1930; Lambert, 1948; Warner, 1958; Bryden *et al.*, 1972; Kano *et al.*, 1981; Asari *et al.*, 1985; Latshaw, 1987; Molinari and Jorquera 1988; Vivo and Robina, 1990, 1991; Franco *et al.*, 1992 and1993; Abdel-Hafez, 1997**].

The gastric primordium is detected firstly at 24 days old of goat embryos (**Molinari and Jorquera, 1988**); 18 days old of sheep embryos (**Bryden *et al.*, 1972**); 28 days old bovine embryos (**Warner, 1958**);. In respect to the CRL the gastric primordium is observed firstly at 0.6 cm sheep embryos (**Michel, 1977**); 1 cm bovine embryos; (**McGeady and Sack, 1967**); 1.4 cm buffalo embryos (**Panchamukhi *et al.*, 1975**); 1.5 cm camel embryos (**Soliman, 1987**).

The gastric primodrium of ruminants appears spindle shape or fusi form with lateral compressions (**Lambert, 1948; Warner, 1958; Bryden *et al.*, 1972; Kano *et al.*, 1981; Molinari and Jorquera, 1988; Vivo and Robina, 1990, 1991**) or lenticular shape without lateral compression (**Lewis, 1915**)

Warner (1958), stated that the gastric primordium of bovine embryos has two convex curvatures, dorsal greater and ventral lesser, while **Panchamukhi *et al.* (1975); Dougbag, (1981); Asari *et al.* (1985); Soliman, (1987); Molinari and Jorquera, (1988)** demonstrated dorsal convex greater curvature and ventral concave lesser one.

The gastric primordium is divided into dorsal and ventral parts (before rotation), by two lateral longitudinal mesodermal ridges at 24 days old of goat embryos (**Molinari and Jorquera, 1988**); at 28 days old of bovine embryos (**Warner, 1958**); at 1.4 cm CRL of buffalo embryos (**Panchamukhi *et al.*, 1975**). On the other hand, **Michel (1977)** detected these ridges, only after rotation and during appearance of rumino-reticular primordium, as dorsal andventral longitudinal mesodermal ridges.