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ASSIUT UNIVERSITY
FACULTY OF VETERINARY MEDICINE

COMPARATIVE MORPHOLOGICAL STUDIES ON THE COLON, RECTUM AND ANAL CANAL OF SOME DOMESTIC ANIMALS

BY

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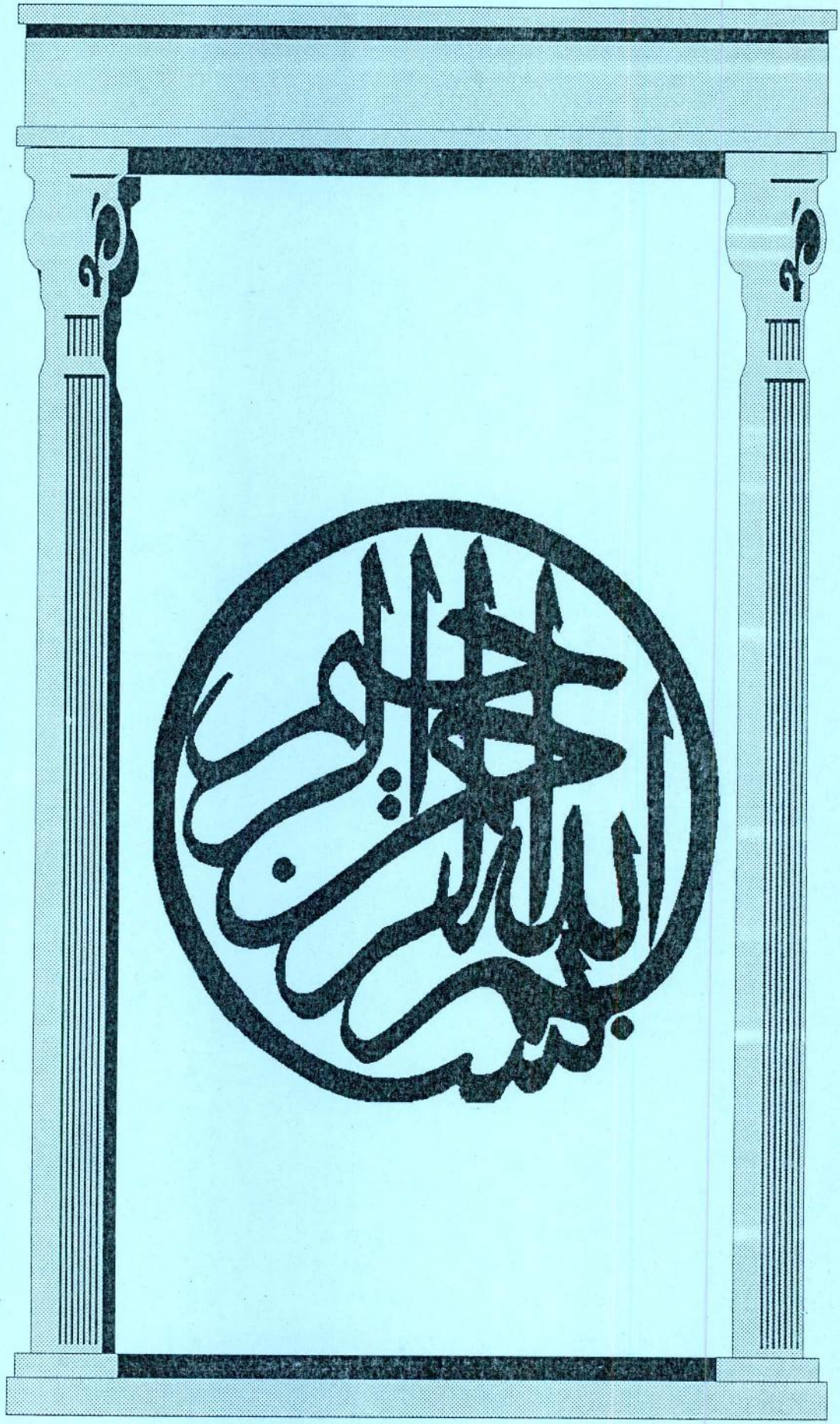

To My Parents

With My Great Love and Gratitude

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Contents

INTRODUCTION

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The macro-and microscopic anatomy of the large intestine and its topography in man and domestic animals contribute to its decisive influence upon vital physiological functions as maintenance of fluid and electrolytes, absorption of nutrients, storage and regular elimination of excreta and acts as an incubator for numerous micro-organisms which have ability to synthesize certain nutritional factors.

The colon exhibits large interspecies variations in anatomy, these variations are believed to be at least partly related to the diet (CHRISTENSEN, 1972; STEVENS, 1977; PHILLIPS and DEVROEDE, 1979). The differences in diet establish the need for selective processing of the ingesta as well as a place where the excreta take the final form.

There is a reasonable correspondence between the structure of various parts of the colon and the digestion of specific kinds of food substances. It is therefore no surprise that the whole structure of the colon and the proportion of its different parts vary considerably among Carnivores, Herbivores and Omnivores. However, some generalizations are possible.

The macro-and micromorphological features of the colon, rectum and anal canal in most domestic animals have been dealt with textbooks of veterinary anatomy and histology (ELLENBERGER and BAUM, 1943; TRAUTMANN and FIEBIGER, 1957; SCHUMMER and NICKEL, 1979; LIEBICH, 1990; BANKS, 1993; EVANS, 1993; STINSON and CALHOUN 1993; DYCE, SACK and WENSING, 1996) as well as in various publications (SLOSS, 1954; BORELLI, FERNANDES FILHO, D'ERRICO and PEREIRA, 1978; IBRAHIM, 1983; WALLY, 1986).

However, the morphometric studies on the colon, rectum and anal canal were scarce except the work of BUDSBERG and SPURGEON (1983)

on the canine anal canal and that of LACKHOFF (1983) on the intestine of Roe deer and Heterohyrax, as well as LUDWIG (1986) on the large intestine of 30 species of ruminants.

This study was undertaken to provide a systematic description including quantitative measurements as well as evidence of the microscopic anatomy of the different regions of the colon in which the fecal matter took its final forms as well as the rectum and anal canal in three species of animals representing Carnivora (Dog), Ruminantia (Goat) and Equidae (Donkey). In addition, some parameters were performed to clarify the role of the different layers of the parts under investigation in the formation of the final form of the fecal matter.

MACROMORPHOLOGICAL STUDIES