STUDIES ON THE LYMPHATIC SYSTEM OF THE GASTROINTESTINAL TRACT

THESIS
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BY

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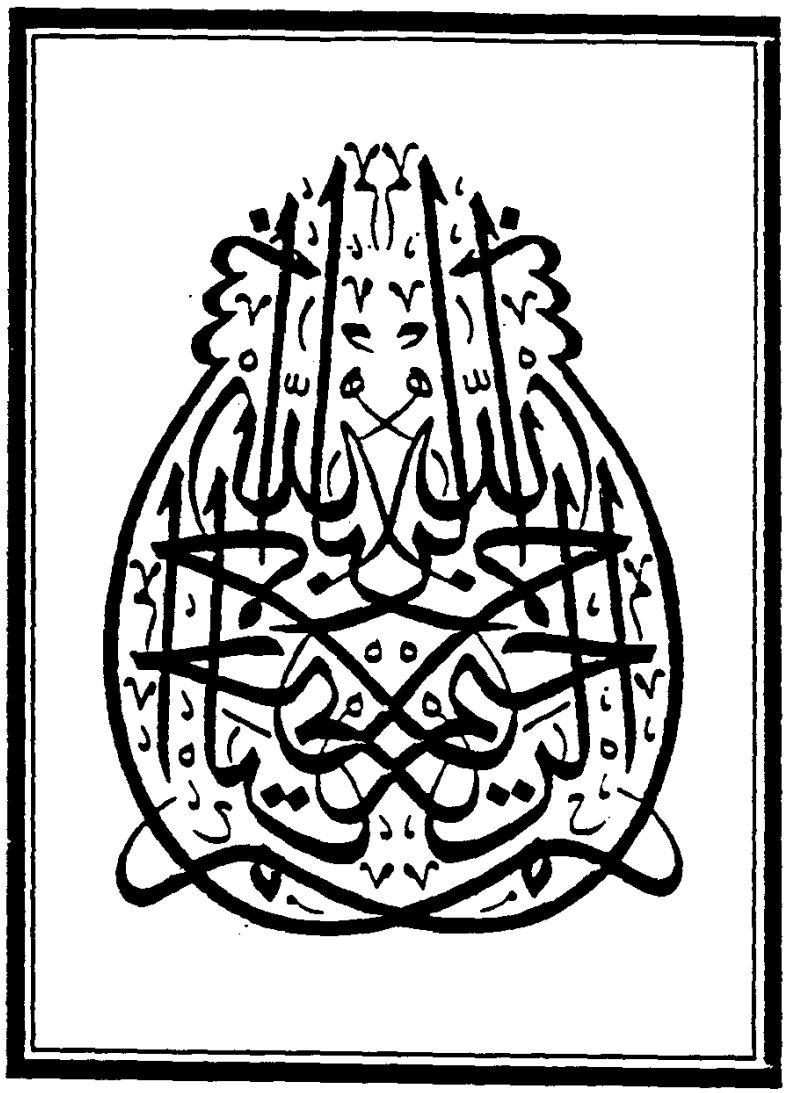

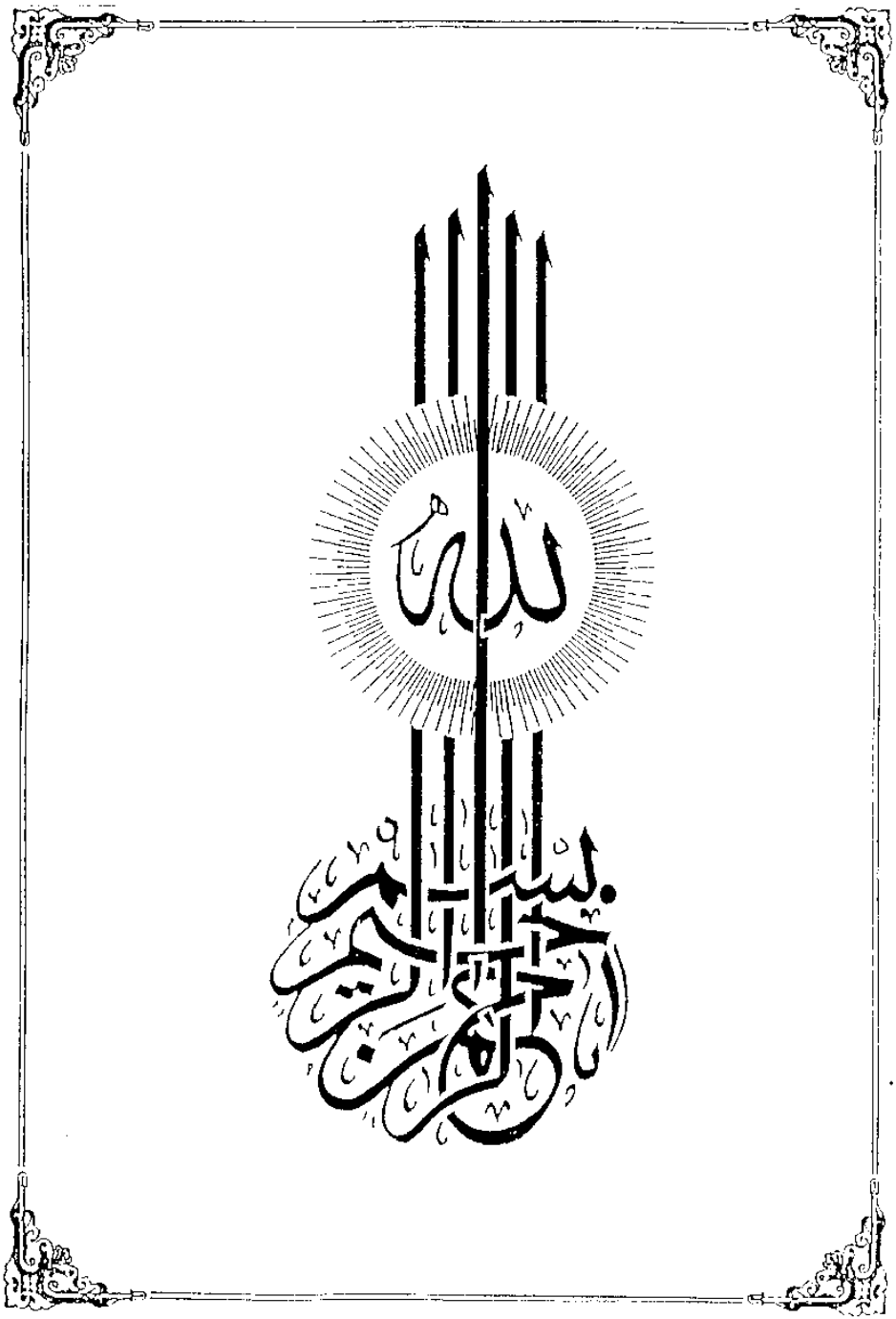

صدق الله العظيم

To...

My Mother

&

My Future Wife

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INTRODUCTION AND AIM OF WORK

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The lymphoid tissues of the gastrointestinal tract are an important component of the immune defense mechanism in the body. The cells of the immune system, principally lymphocytes, are disseminated throughout the body either as isolated cells, or as localized aggregations particularly in the gastrointestinal tract and lymphoid organs (Wheater et al., 1987). In addition to the thymus which involutes in adult life, lymphoid tissues are mostly located in the spleen, lymph nodes, and in the walls of the intestine. Previous studies have focused on the morphology and the architecture of the spleen (Pobst, 1988), lymph nodes (Weiss, 1988) and colon (Cormack, 1987), in adult mammals. Also, the distribution of thymus-dependent and thymus-independent areas in such organs, in adult mammals, has been previously investigated (Gutman and Weissman, 1972; Goldschneider and McGregor, 1973). However, the study of the early postnatal growth of the lymphoid areas of these organs, as well as the distribution of T and B lymphocytes has received little attention. Therefore, the aim of the present work is to study the postnatal development of the lymphoid tissues in the white pulp of the spleen, the cortex of mesenteric lymph nodes and the wall of the cecum in

rat. The distribution of the T- and B-cell areas in the white pulp of the spleen and the cortex of the mesenteric lymph nodes of rat will be studied as well.

There has been considerable interest in the pharmacologic use of corticosteroids administered on alternate-days rather than in daily divided doses, in an effort to reduce the side effects which occur with chronic treatment (Reichling and Kligman, 1961). In most cases, the therapeutic effectiveness of the alternate-day therapy program was nearly similar to that with daily dosage schedules (Soyka and Saxena, 1965; Soyka, 1967). The alternate-day corticosteroid regimen succeeded to minimize or prevent manifestations of Cushing's syndrome traditionally associated with long-term steroid therapy (Soyka and Saxena, 1965; Soyka, 1967; Sadeghi-Nejad and Senior, 1969). In addition, steroid therapy given on alternate-day program showed that the normal growth pattern, estimated by recording heights and weights, in infants and older children is not suppressed (Bacon and Spencer, 1973; Dluhy et al., 1973; McEnery et al. 1973; Preece, 1976; Byron et al., 1983). Previous studies reported that corticosteroids, administered on daily divided dosage schedules, cause destruction of lymphoid tissues in certain animal species, including rats (Everett and Tyler, 1967; Esteban, 1968). On the other hand, the study of the immunosuppressive changes as a result of alternate-day steroid therapy in the young and adult rats has not been investigated. Also, the study of the long-term consequences of such therapy in the

immunologically immature rats has not been determined. Therefore, the aim of the present work is to study the effects of alternate-day corticosteroid therapy on the immune system of the postnatal rat and to detect the possible reversibility of such effects.

CHAPTER II

REVIEW OF LITERATURE

REVIEW OF LITERATURE

THE SPLEEN

I) Macroscopic anatomy and function of the spleen :

Wheater, Burkitt, and Daniels (1987) described the spleen as follows :

"The spleen is a large lymphoid organ situated in the left upper part of the abdomen; it receives a rich blood supply via a single artery, the splenic artery, and is drained by the splenic vein into the hepatic portal system. On macroscopic examination of the cut surface, the spleen appears to be a highly vascular tissue consisting of discrete white nodules, the so-called white pulp, embedded in a red matrix called the red pulp. The spleen removes debris, particulate matter, as well as aged or defective blood cells, particularly erythrocytes, from the circulation. It also produces immunological responses against blood-borne antigens".

II) Organization of the spleen :

Pobst (1988) described the spleen as follows :

"The spleen is enclosed by a capsule of dense connective tissue. From the capsule, a rich network of trabeculae subdivides the organ into communicating compartments. The capsule is indented at the hilus