Ain Shams University
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SUSTAINED RELEASE THEOPHYLLINE ADMINISTRATION IN PATIENTS WITH CHRONIC OBSTRUCTIVE AIRWAYS DISEASE

THESIS

SUBMITTED IN PARTIAL FULFILMENT FOR THE MASTER DEGREE OF CHEST DISEASES

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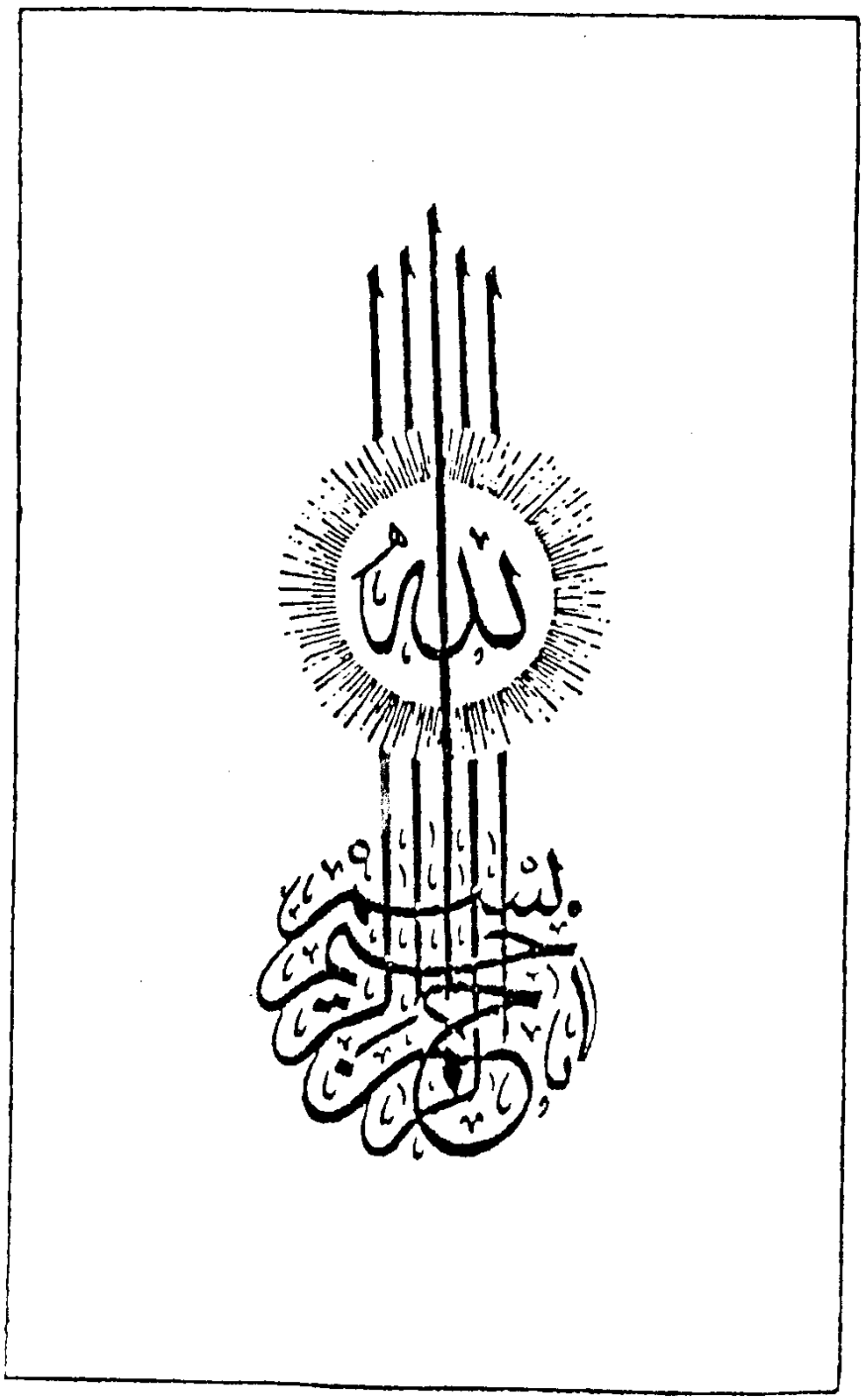

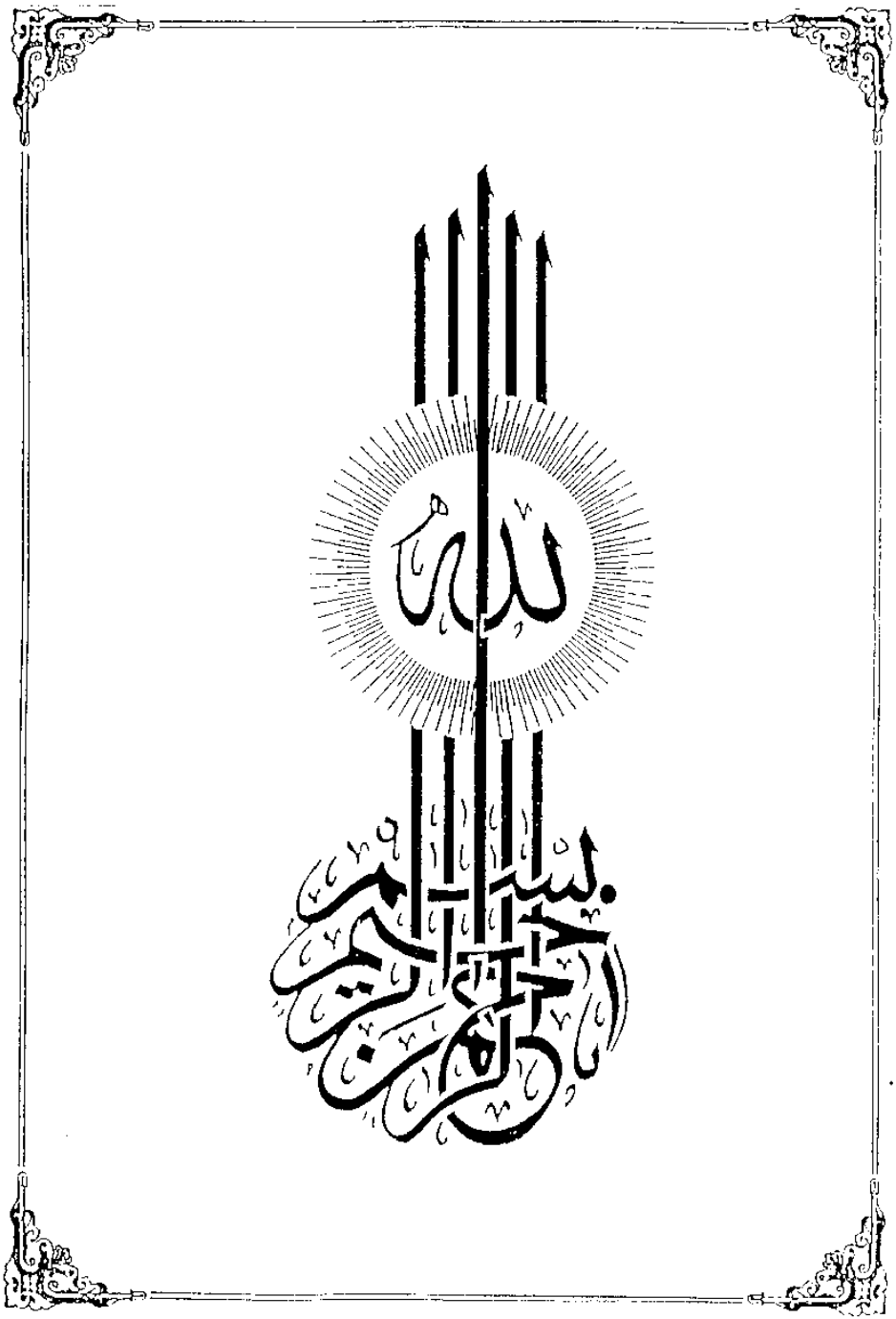

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ABBREVIATIONS

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A A : Arachidonic acid.

ATP: Adenosine triphosphate.

BA : Beclomethasone aerosol.

cAMP: cyclic adenosine monophosphate.

cGMP: cyclic guanosine monophasphate.

COMT: Catechol-O- methyltransferase.

COPD: Chronic obstructive pulmonary disease.

FEV_1: Forced expiratory volume in one second.

FVC : Forced vital capacity.

IPPB: Intermittent positive pressure breathing.

MAO : Monamine-oxidase.

$PFEV_1$:Predicted forced expiratory volume in one second.

PGE_1 .Prostaglandin E_1 .

PGE_2 :Prostaglandin E_2 .

PGF: Prostaglandin F.

PLA_2: Phospholipase A_2.

PSi : Pound /square inch.

P.VC: Predicted Vital capacity.

rpm : Rotation per minute.

Serum$t_{\frac{1}{2}}$: Serum half life.

VC : Vital capacity.

INTRODUCTION AND AIM OF THE WORK

INTRODUCTION

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The bronchodilator drug, theophylline,enjoys widespread usage in the therapy of obstructive airways disease because of its effectiveness in relaxing bronchial smooth muscle. (Isles et al, 1982) .

On the other hand, use of this drug carries an appreciable risk of serious toxicity which is dose related and ranges from gastrointestinal disturbance to cardiac arrhythmias and life threatening seizures. This is due to its narrow therapeutic range (10-20 ug/ml in serum) and because there is considerable interindividual variation in its clearance rate. (Mountain and Neff, 1984) .

Accordingly, it is important to understand the various factors that affect the clearance of theophylline and the many other drugs that are cleared by the mixed function oxidase system of the liver. (Jenne., 1977) .

AIM OF THE WORK
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The aim of this work is to assess serum theophylline level and its significance in some of the Egyptian patients with chronic obstructive airway disease administering sustained release theophylline.

REVIEW OF LITERATURE

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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The terms "Chronic obstructive pulmonary disease" "Chronic airways obstruction, " chronic obstructive lung disease "have been introduced to cover the different disease entities characterized by persistent slowing of airflow during forced expiration. While these terms are admittedly insufficient to characterize the disorder according to etiology, they serve to emphasize two important aspects, chronicity, and obstruction to airflow.

In 1975 the Joint Committee on Pulmonary Nomenclature of the American college of chest physicians and the American Thoracic Society preferred COPD .

In the 22nd Aspen lung conference, 1980 the newer term "Chronic airflow limitation" permeated the conference, because the notion of airflow limitation is conceptually more appealing than obstruction in disease states when loss of elastic recoil may be the major

factor limiting expiratory airflow (Petty., 1980), but Whyte and Addis, 1984 agreed with the term chronic airflow obstruction but objected the term chronic airflow limitation as the latter term does not exclude airflow limitation as the result of reduced driving force as in advanced restrictive lung disease, where the decreased lung volume is the principal cause of reduced flow .

THE SPECTRUM OF CHRONIC OBSTRUCTIVE DISEASE OF THE AIRWAYS

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cystic fibrosis	Asthma	chronic bronchitis	chronic bronchitis and emphysema	emphysema

(Spectrum of obstructive disease of airways)

Obstructive disease of the airways may be viewed as a spectrum, ranging from that in which intrinsic disease of the airways is the predominant disorder (Far left) , to the other extreme where the airways are free of disease but the parenchyma of the lungs is full of enlarged airspaces produced by destruction of walls (emphysema). Example of the disease at each extremity of the spectrum :cystic fibrosis for the left end of the spectrum ; α- antitrypsin deficiency for the right, but pure forms of either end of the spectrum, however, are uncommon. Indeed, especially for the middle of the spectrum (chronic bronchitis and emphysema),mixtures are the rule. Perhaps one reason for the overlap is that the disorders share a common pathogenic mechanism,