PURIFICATION AND CHARACTERIZATION OF HYALURONIDASE FROM CERASTES CERASTES VENOM

THESIS

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the Master Degree in Biochemistry

By

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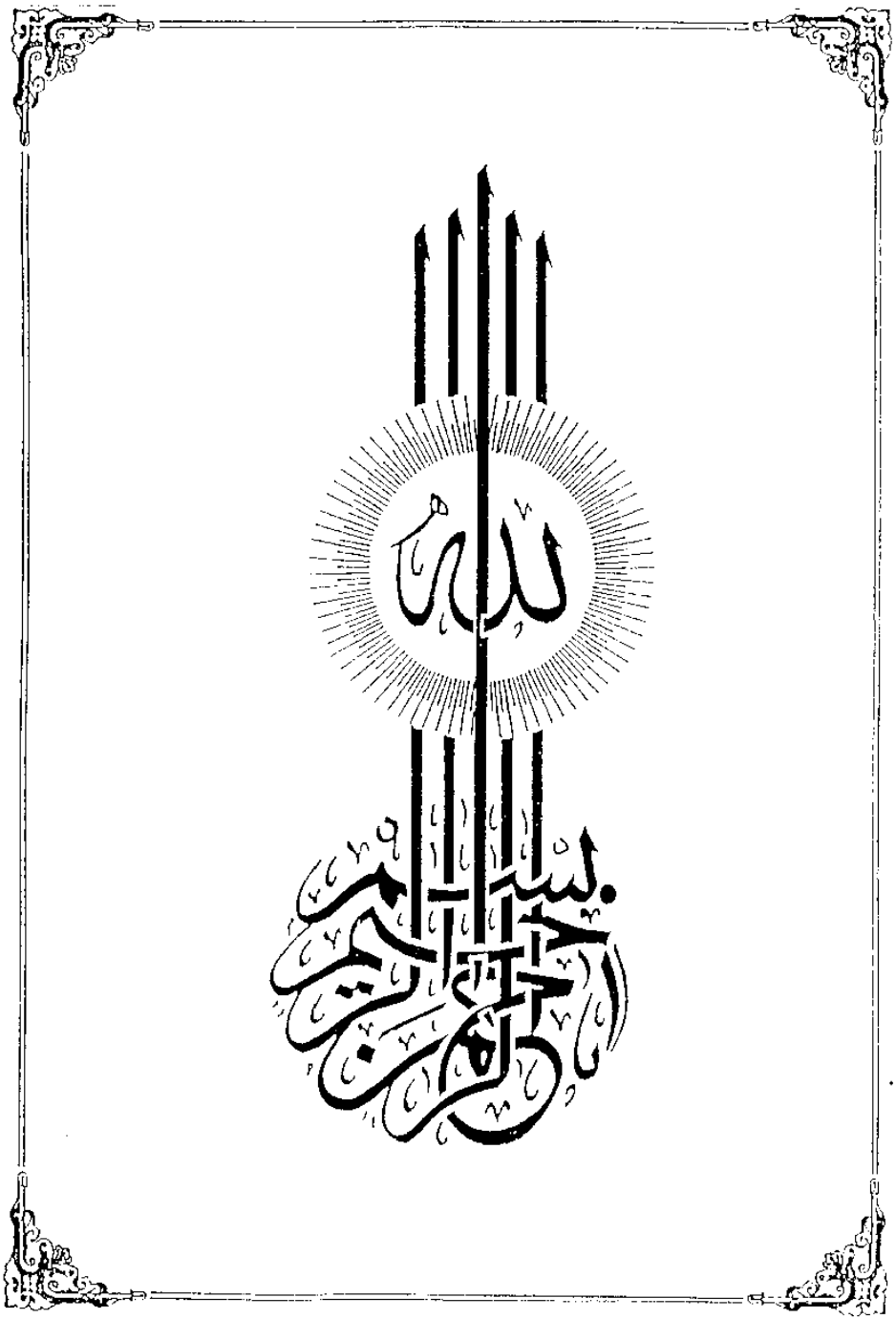

DEDICATED
TO MY
FATHER & MOTHER

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AIM OF THE WORK

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Snake venoms are complex and concentrated mixtures of many enzymes and substances of marked biological concern

The understanding of the net effect of envenomation on the body of bittin victim requires a complete idea about the effect and role of each component separetly. And hence the need for fractionation, purification and characterization of the different venom constituents.

The hyaluronidase enzyme was well known to occur in the majority of snake venom families. It has been implicated in the diffusion of the injected venom into and through tissues, but it has never been shown to definitely participate in this action.

Our task in such a study is to purify the hyaluronidase enzyme from one of Egyptian vipers venom, which is the Cerastes cerastes snake venom.

Characterization of both physical and kinetic behaviour of the enzyme will be explored.

Effect of temperature, pH, metal and non metal ions on it's activity will be attempted.

Calculation of its Michaelis constant (K_m). for its preferable substrate, hyaluronic acid, is of great value for its characterization.

INTRODUCTION

GENERAL INTRODUCTION

In ancient civilization, the snake embodied the spirit of the earth. At this time, the snake was the attribute of all cosmogonies.

Snakes represented the spirit of air and earth and was the symbol of health, Knowledge, life, and fecundity. Aaron, the brother of Moses, turned rods into snakes, and placed a bronze snake on a staff, anyone who was the victim of snake poisoning was saved when he saw this symbol.

Jung (1964) told the curious story of the chemist Kekule who, in the 19th century, came to define the molecular structure of benzene, influenced by the memory of ancient symbols, he was dreaming one night of a snake holding it's tail in it's mouth and on awakening from his dream, related the circular shape of the snake to the cyclic structure of benzene.

The "ouroboros" of Africa is a snake which bites its own tail off since it fertilizes itself it is considered a "Source of life"Being venomous, it is also a "Source of death" so the "Ouroboros" is an expression of the idea of life and death at the same time (CHEVALIER, 1973).

In the 16th century, Van Helmont proposed his phlogistic theory, that snake venoms are "irritated spirits" which were "so cold" that they coagulated the blood in the veins and arrested the circulation.