ECOLOGICAL AND PHYTOCHEMICAL STUDIES ON *LAUNAEA SPINOSA* "FORSSK"

BY

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THESIS

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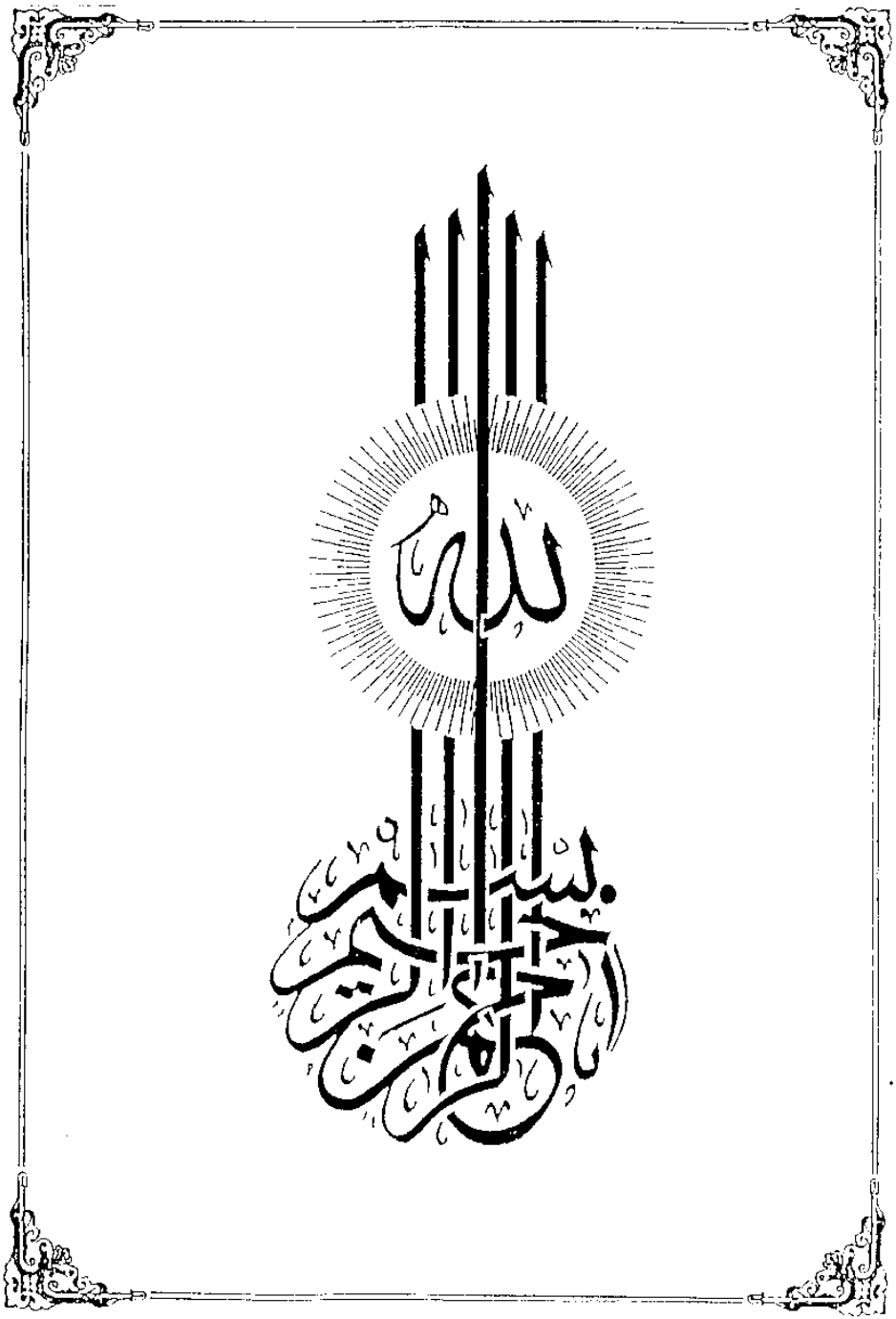

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* * *

THIS THESIS HAS NOT BEEN SUBMITTED TO THIS OR ANY OTHER UNIVERSITY. THE REFERENCES GIVEN SHOW HOW FAR I HAVE AVIALED MYSELF TO THE WORK OF OTHER INVESTIGATORS.

SIGNATURE

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INTRODUCTION

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Phytochemical investigations made on some desert plant species in recent decades revealed the occurrence of some active constituents of medical importance.

This encouraged research work on desert flora hoping to find out active constituents of medicinal value in other species.

The work embodied in this dissertation was made on Launaea spinosa Forssk., which belongs to the family Compositae, and spreads in the Suez Desert. L. spinosa also grows in the part of the Arabian desert extending from Wadi-Tumilat to Qena-Qosseir road (stands for septentrional, North) but as a rare plant. It occurs also in Sinai proper i.e., South of El-Tih desert. It always grows in deep sandy and rocky soils (Täckholm, 1974 and Montasir and Hassib, 1956); Fig. 1 and 2.

The systematic position of Launaea spinosa is as follows :

Division	: Phanerogamae
Sub-division	: Angiospermae
Class	: Dicotyledonae
Sub-class	: Sympetalae
Order	: Campanulatae
Family	: Compositae
Tribe	: Cichorieae
Genus	: Launaea

Fig; (1): The geographical distribution of Launaea spinosa in Egypt.

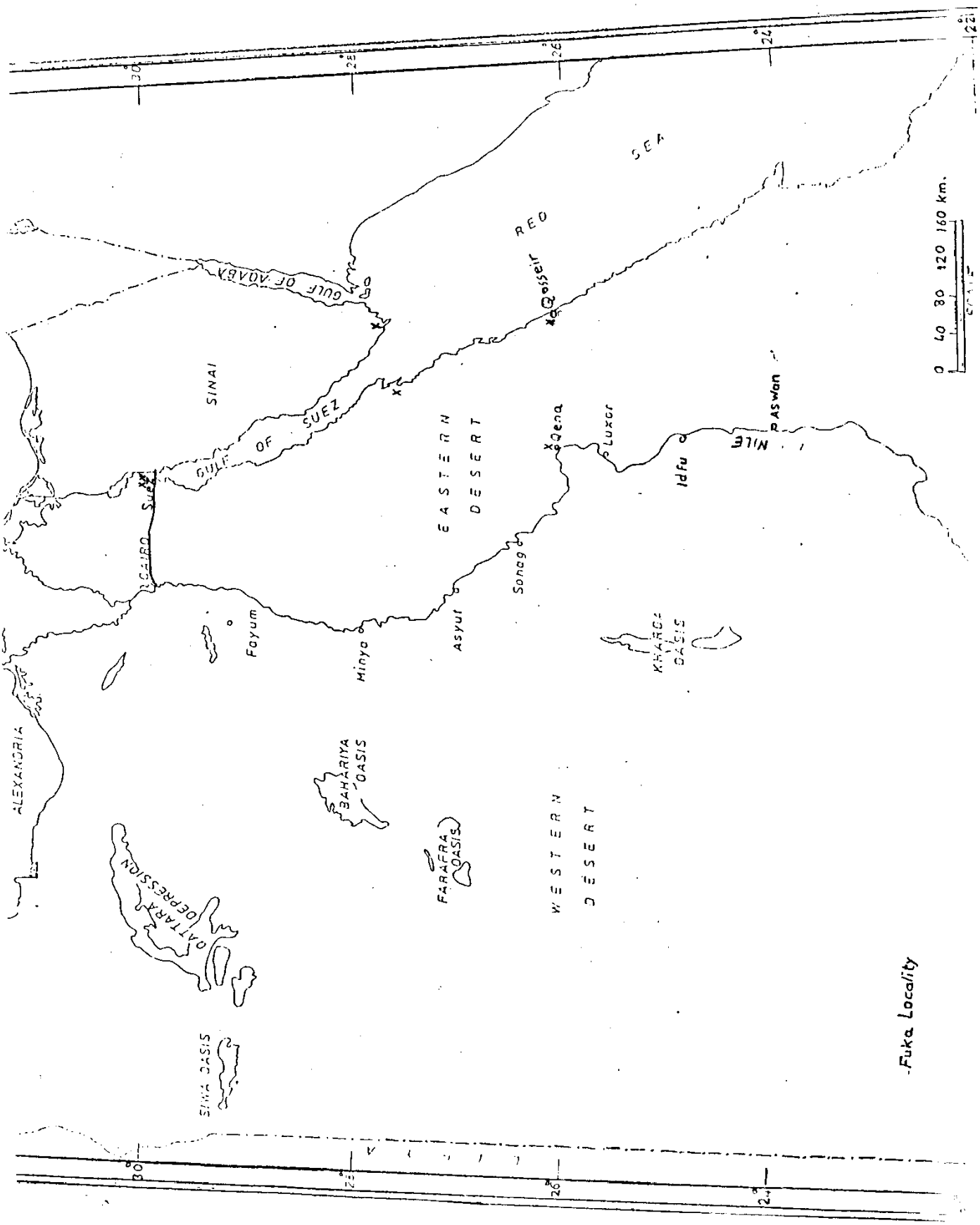

Fig. (2) Launaea spinosa Forssk

The plant is a prennial spiny shrub with spiny interlocked branches and yellow flowers. Heads are small, sessile and few-flowered (Täckholm, 1974).

The investigation comprises ecological and phyto-chemical studies on L. spinosa.

The phytochemical studies include a general preliminary phytochemical screening and identification of different natural products. These are determined, seperated and identified using different physiological and biochemical methods.

Natural products are known to comprise different classes of chemical compounds. Among these classes glycosides, tannins, flavonoids, saponins, sterols and alkaloids are of majore interest from the pharmaceutical and medicinal point of view.

In general, flavonoids are important to man, not only as they contribute to plant colour, but also because some of them like coumestrol, phloridzin, rotenone, etc. are physiologically active (Harborne et al., 1975).

The present investigation, aimed to study the ecology and eco-physiology of L. spinosa at the km 104 of Cairo-Suez Desert road to clarify the range of environmental conditions within which this species can live and adapt itself in the main community.

The phytochemical studies aimed to investigate the main chemical constituents of L. spinosa especially the carbohydrates, proteins, lipids and the active principle flavonoids.

The review of the literature shows that no ecological, ecophysiological or phytochemical works have, so far, been done on L. spinosa. This work is therefore the first on this species.

MATERIALS AND METHODS

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I. ECOLOGICAL STUDY

1. Environmental conditions :

A- Climatic factors:

The mean values of climatic particulars for Cairo-Suez road km 104 during the period of investigation, 1983, were obtained from the Meteorological Department of Egypt for the studied habitat.

B- Edaphic factors :

Soil profiles supporting L. spinosa were sampled from the habitat in area close to the naturally growing plants. Soil samples were taken from the successive depths of: 0-5 cm, 10-20 cm, 20-30 cm, 30-40 cm, 40-50 cm and 50-60 cm, respectively.

The physical and chemical properties of the sampled profiles were studied according to methods described by Jackson (1967).

The seasonal variations in soil moisture content were determined using methods described by Jackson (1967) and as adopted by numerous workers.

2. Vegetation analysis :

The structure of vegetation of the habitat was studied sociologically according to procedures described