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ابراهيم عبدالعزيز ابراهيم عبدالعزيز

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تحت إشراف

أ.د/ نهلة عبدالحميد ايوب
كلية الصيدلة، جامعة عين شمس
استاذ العقاقير

أ.د/ أماني امام خليفة
أستاذ الأدوية و السموم
كلية الصيدلة، جامعة عين شمس
منتدب للعمل كمستشار التخطيط الاستراتيجي
لمستشفى 57357

قسم الأدوية و السموم – كلية الصيدلة – جامعة عين شمس

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Pharmacological Study of The Potential Anti-Inflammatory Effect of Certain Natural Extract(S) In Experimental Models

**A Thesis Submitted in Partial Fulfillment for Requirements of the
Master Degree in Pharmaceutical Sciences
(Pharmacology and Toxicology)**

By

Ebrahim Abdel Aziz Ebrahim Abdel Aziz

Bachelor Degree in Pharmaceutical Sciences, Ain Shams University (2009)

Captain Pharmacist in the Pharmaceutical Factory of Armed
Forces

Under Supervision of

Professor Amani E. Khalifa

Professor of Pharmacology and
Toxicology Faculty of Pharmacy,
Ain Shams University
Seconded as Consultant for 57357
Children Cancer Hospital

Professor Nahla A. Ayoub

Professor of pharmacognosy,
Faculty of Pharmacy, Ain
Shams University

Department of Pharmacology and Toxicology

**Faculty of Pharmacy - Ain Shams University
(2015)**



ABSTRACT



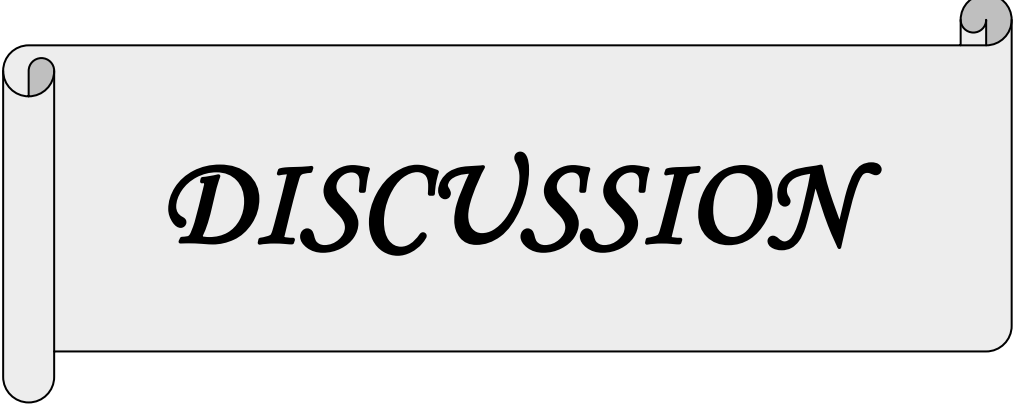
INTRODUCTION



AIM OF THE WORK

*MATERIALS AND
METHODS*

RESULTS

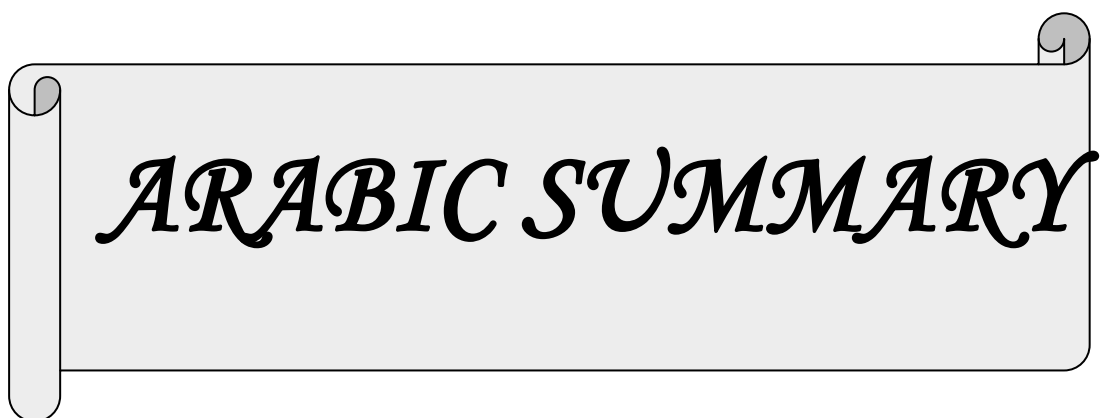


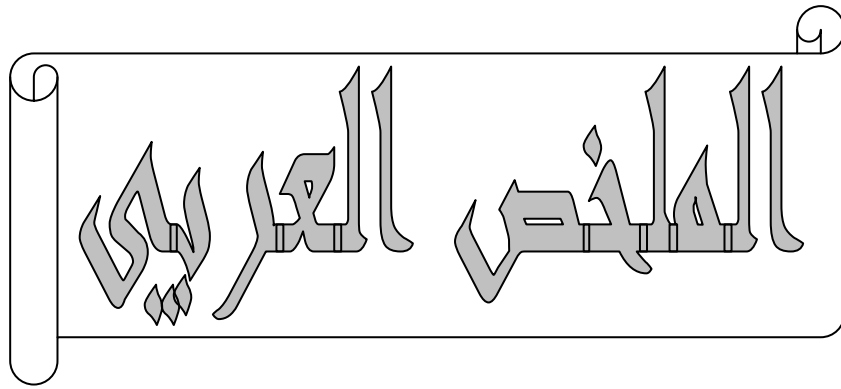
DISCUSSION

*SUMMARY AND
CONCLUSIONS*



REFERENCES





Abstract

Background: Inflammation is a localized protective reaction of the cells/ tissues of the body to allergic or chemical irritation, injury, and/or infection. It is a destroying process involves the recruitment of blood derived products, such as plasma protein, fluids, and leukocytes (neutrophils, macrophages, fibroblasts, etc) into perturbed tissue. This migration is facilitated by the alterations in the vasculature, under the effect of inflammatory mediators such as PGE₂, TNF- α , and interleukin-6, that lead to vasodilation, increased vascular permeability, and increased blood flow.

Schotia brachypetala Sond. (Fabaceae) is indigenous to southern Africa region. Its bark decoction was used by traditional healers for the treatment of diarrhoea. Ethanolic extract of the dried leaves contains linolenic acid methyl-5,11,14,17-eicosatetraenoate, and quercetin.

Aim: The current study evaluates the anti-inflammatory activity of the methanolic leaf extract of *Schotia brachypetala*.

Place and duration of study: This study was conducted in the Department of Pharmacology, Faculty of Pharmacy, Ain Shams University, Cairo, Egypt during the period between July 2013 and December 2014.

Methodology : The anti-inflammatory activity was assessed using 2 models viz. carrageenin-induced rat paw oedema and croton oil-induced ear oedema.

Results: pretreatment of rats with *Schotia brachypetala* methanolic leaf extract at doses (50,100,200 mg/kg orally) significantly inhibited the carrageenin-induced increase in the oedema volume of the paws at 4 hours by (31.25, 50, and 76.25 %), respectively compared to control. Indomethacin-treated group showed significant anti-oedema effect by 90% compared to control group. In croton oil model, pretreatment of rat ears topically with *Schotia brachypetala* methanolic leaf extract at doses (10,20,40 mg/ear) significantly decreases the oedema to (39.56, 23, and 15.8%), respectively compared to control group. Myeloperoxidase activity was reduced by (42,57.8, and 82.6%) by doses 10,20,40 mg/ear of *Schotia brachypetala* methanolic leaf extract. TNF- α level was reduced in a similar pattern. Histopathological examination of the ear tissue revealed that 40 mg/ear dose of methanolic leaf extract of *Schotia brachypetala* had normal dermal structure with no histopathological changes.

Conclusion: This study demonstrated the anti-inflammatory activity of the methanolic leaf extract of *Schotia brachypetala*.

Herbal Medicine in the Southern African Region

Great interest in herbal medicine as a potential source of phytopharmaceuticals has created the need to review common factors responsible for major diseases and body disorders. Traditional medicinal herbal remedies in the southern African region have long been used to treat various pain- or inflammation-related symptoms. Although the precise mechanism of action of many herbal drugs have yet to be determined, some of them have been shown to exert anti-inflammatory and/or antioxidant effect in a variety of cells in the human and animal bodies **(Iwalewa et al., 2007)**.

The anti-inflammatory properties of several phytomedicines , like phytoestrogens, and flavonoids, could be attributed to inhibition of the molecular targets of the proinflammatory mediators in inflammatory responses. There are other plants that contain alkaloids, tannins, saponin, anthraquinone, triterpenoids and other constituents which have been reported to possess a diverse range of bioactivities including anticancer, immunostimulatory, antibacterial, antimalarial, and antituberculosis activities **(Naidoo et al., 2004)**. Therefore, some of the causative organisms and factors responsible for initiating and