Chapter 12
The Genus Origanum: Secondary Metabolites, Therapeutic Properties, and Traditional Uses

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ABSTRACT

The genus Origanum (Lamiaceae) encompasses a variety of species recognized for their medicinal properties. It has a wide distribution in the Northern Hemisphere, particularly in the Mediterranean Basin. The term "oregano" is used to refer to several species within the genus Origanum. Origanum species have been used in traditional medicinal practices since ancient times to treat various ailments. Secondary metabolites produced by this genus are important as they take an active role in numerous therapeutic properties and biological activities, including antibacterial, antifungal, antiviral, antioxidant, anti-inflammatory, and antitumor effects. The most prevalent secondary metabolites in this genus are carvacrol, thymol, gamma-terpinene, p-cymene, and linalool. These secondary metabolites

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play an important role in the therapeutic properties and biological activities of the genus. This study aims to present a comprehensive review of the traditional uses of the genus Origanum, its secondary metabolites, and their therapeutic properties.

1. INTRODUCTION

The utilization of plants for medicinal and therapeutic purposes has historical roots that extend back to the earliest periods of human civilization. In their quest for sustenance, early humans experimented with a diverse array of plant species. Edible plants were consumed as food, while those deemed toxic or possessing adverse effects were either avoided or utilized as instruments of defense. Additionally, plants that elicited physiological responses—such as perspiration, defecation, healing, or hallucination—were designated for medicinal applications and practices of divination. Over millennia, humans have honed their ability to harness a wide range of plants as potential remedies for various ailments. Approximately four thousand years ago, the Chinese emperor Qien Nong (Chi'en Nung) compiled a seminal guide to medicinal plants, titled Ben Zao (Pen Tsao). This foundational text offers comprehensive information regarding the properties and applications of over three hundred plant species, several of which retain significance in contemporary medicine. Simultaneously and subsequently, the Sumerians documented prescriptions on clay tablets, while the Egyptians chronicled their medical knowledge on rolls of papyrus. The earliest known medical document, the Papyrus Kahun, dates back to the reign of King Amenemhet III (1840-1792 BCE) and addresses women's health issues and various medical conditions. Among the most notable of these medical papyri is the Ebers Papyrus, which provides an extensive account of the pharmaceutical practices prevalent during that era. It includes detailed instructions on the preparation and administration of various plant-based remedies, specifically those aimed at treating parasitic infections and gastrointestinal disorders. Many of these plants continue to be utilized in both traditional and modern medical practices.

The Greeks and Romans owe a significant debt to earlier civilizations for their extensive herbal knowledge, a body of work meticulously documented in Dioscorides' "De Materia Medica" and the comprehensive 37-volume natural history authored by Pliny the Elder. These foundational texts have been preserved through translations into Arabic by notable figures such as Rhazes and Avicenna. The understanding and application of medicinal plants were further advanced by monastic communities in Europe, who not only cultivated various medicinal species but also translated these pivotal Arabic manuscripts. The establishment of the first recognized apothecaries in Baghdad during the 9th century marked a significant development in the field. By the thirteenth century, London emerged as a critical center for the trade of herbs