PREVIOUSLY INVESTIGATIONS ON ESSENTIAL OILS FROM *ARTEMISIA* SPECIES

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Annotation: *The genus Artemisia L., belonging to the Asteraceae family, includes more than 500 species worldwide. Research conducted by scholars represents that the essential oils of this plant possess high biological activity and are widely used in both traditional medicine and modern medical practice. This article aims to discuss the main constituents of the essential oils derived from studied species of Artemisia and their corresponding biological activities.*

Key words: *Asteraceae, Artemisia L., essential oils, hepatitis B, anti-nociceptive, antibacterial, antifungal, Gas-Chromatography/Mass spectrometry.*

ARTEMISIA OILASIGA MANSUB O‘SIMLIKLARNING EFIR MOYLARI TAHLILI

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Annotatsiya: *Artemisia L. Asteraceae oilasiga mansub, dunyoda uning 500 dan ortiq turi uchraydi. Tadqiqotchilar tomonidan o‘tkazilgan tadqiqotlar shuni ko‘rsatadiki o‘simlikning efir moylari yuqori biologik aktivlikka ega bo‘lib xalq tabobati va zamonaviy tibbiyotda keng qo‘llaniladi. Ushbu maqolada tadqiqotchilar tomonidan o’rganilgan Artemisia turlariga mansub o’simliklardan ajratib olingan efir moylarining asosiy moddalari va ularning biologik faolligini muhokama qilish maqsad qilib olindi.*

Kalit so‘zlar: *Asteraceae, Artemisia L., efir moylari, gepatit B, anti-nosiseptiv, antibakterial, antifungal, Gaz-xromatografiya / Mass-spektrometriya.*

РАНЕЕ ПРОВЕДЕННЫЕ ИССЛЕДОВАНИЯ ЭФИРНЫХ МАСЕЛ ИЗ ВИДОВ *ARTEMISIA*

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Аннотация: *Род Artemisia L., относящийся к семейству астровых (Asteraceae), включает более 500 видов, распространенных по всему миру. Исследования, проведенные учеными, показывают, что эфирные масла этого растения обладают высокой биологической активностью и широко используются как в традиционной медицине, так и в современной медицинской практике. Целью данной статьи является обсуждение основных компонентов эфирных масел, полученных из изученных видов полыни, и их соответствующей биологической активности.*

Ключевые слова: *Asteraceae, Artemisia L., эфирные масла, гепатит B, антиноцицептивное, антибактериальное, противогрибковое действие, газовая хроматография/масс-спектрометрия.*

Introduction. In Central Asian nations including Uzbekistan, scientific and medical interest is increasingly directed towards the application of herbal remedies and the detailed examination of their chemical composition. The country's official medical practices list the use 112 species of medicinal plants, a significant majority (80%) of which are sourced from its indigenous flora. This flora is notably rich and varied, encompassing 4,350 species from 1,023 genera and 138 families. Within this botanical wealth, 577 species across 381 genera and 93 families are classified as having medicinal value, including 140 species that are endemic to Uzbekistan.

The *Artemisia* genus is particularly prominent within this medicinal group. For instance:

Artemisia cina ("darmana shuvoq") is employed as an antiseptic for a range of conditions, including musculoskeletal pain, neuralgia, gout, rheumatism, and skin ailments like eczema and radiation-induced burns.

Artemisia absinthium L. ("shuvoq") is used for its anthelmintic properties and to treat digestive issues such as anorexia and other gastrointestinal disorders.

Artemisia annua L. ("shirin shuvoq") has a traditional use as tea to alleviate fever and chills.

Artemisia dracunculus L. (tarragon) finds dual purpose as a culinary herb and a therapeutic agent.

Literature Review. The global expansion of natural product use in medicine and pharmacology has motivated extensive research into the composition and bioactivity of essential oils derived from *Artemisia* species. Investigations have been effective in revealing that these oils have significant activities against a variety of pathologies. Analytical studies, primarily utilizing Gas Chromatography/Mass Spectrometry (GC/MS), have identified a common set of major chemical constituents (each representing ≥10% of the oil) across different species. These principal components include 1,8-cineole, camphor, capillene, cis-davanone, davanone, eugenol, limonene, linalool, *α*-thujone, *β*-caryophyllene, *β*-pinene, and *γ*-terpinene, among others. A comprehensive list of these major components, correlated with their respective plant species, is provided in Table 1 [1-4].

Table 1

The major compounds of essential oil from *Artemisia* species

Plant name	Plant part	Major components of the essential oil	Ref.
A. absinthium	aerial parts	eucalyptol (25.59%), linalool (11.99%), *β*-myrcene (10.05%)	[5]

Plant name	Plant part	Major components of the essential oil	Ref.
A. annua	aerial parts	1,8-cineole (18.68%), camphor (11.4%), *α*-pinene (9.3%), 3-carene (6.3%)	[6]
A. arborescens	aerial parts	trans-thujone (24.2%), camphor (18.9%)	[7]
A. arborescens	aerial parts	*β*-thujone (89.64%), camphor (5.34%), *β*-pinene (2.01%)	[8]
A. argyi	aerial parts	eucalyptol (31.23%), *β*-caryophyllene (22.99), thujone (7.31%),	[9]
A. asiatica	aerial parts	1,8-cineole (23.4%), piperitone (21.2%), p-cymene (14.5%), (z)-davanone (9.7%)	[10]
A. aucheri	aerial parts	cis-davanone (22.59%), 1,8-cineole (13.63%), camphor (7.78%), davana ether (7.64%), linalool (6.49%), *β*-ionone (5.24%), thymol (2.36%)	[11]
A. brachyloba	aerial parts	davanone (10.67%), 1,8-cineole (6.21%)	[12]
A. campestris L.	aerial parts	*β*-pinene (54.5%), cadin-4-en-7-ol (9.5%), z-*β*-ocimene (6.0%) and *γ*-terpinene (4.6%).	[13]
A. dracunculus	aerial parts	sabinene (19.19%), *β*-terpinene (8.94%), terpinen-4-ol (3.83%), *α*-pinene (3.08%)	[14]
A. dubia	aerial parts	terpinolene (19.02%), limonene (17.40%), 2,5-etheno [4.2.2] propella-3,7,9-triene (11.29%), isoelemicin (11.05%), p-cymene-8-ol (5.93%)	[15]
A. fragrans	aerial parts	*α*-thujone (30.4%), camphor (26.4%), 1,8-cineole (12.6%) and *β*-thujone (10.0%)	[16]
A. gmelinii	aerial parts	cyclobutaneethanol (24.0%), endo-borneol (9.8%), germacrene D (9.7%), eucalyptol (8.8%), selin-6-en-4a-ol (8.0%), bisabolone oxide A (4.4%), caryophyllene (3.8%), terpinen-	[17]

Plant name	Plant part	Major components of the essential oil	Ref.
		4-ol (3.7%)	
A. judaica	aerial parts	piperitone (16.5%), ethyl cinnamete (12.9%), camphor (9.7%)	[18]
A. scoparia	aerial parts	capillene (9.6-31.8%), methyleugenol (0.2-26.6%), *β*-myrcene (1.9-21.4%), *γ*-terpinene (1.5-19.4%), trans-*β*-caryophyllene (0.8-12.4%), eugenol (0.1-9.1%)	[19]
A. sieberi	aerial parts	*β*-thujone (19.8%), *α*-thujone (19.6%), camphor (19.6%)	[20]

Further global research on various *Artemisia* species underscores their significant pharmacological potential. For example, an investigation into *A. argyi* leaves sourced from Zhumadian, Henan Province in China demonstrated a potent effect against Hepatitis B [21]. Complementary studies on other species reinforce the genus's broad therapeutic value. Work on *A. ludoviciana* from Ozumba, Estado de Mexico, as well as on A. herba-alba and *A. campestris* from different regions of Algeria, revealed substantial biological efficacy. These studies documented notable anti-nociceptive, antibacterial, and antifungal properties, along with data on acute toxicity [22-24].

Conclusions. Research confirms that essential oils are a principal, medicinally active part of *Artemisia* plants, with their key constituents being extensively used across medical systems. The accumulated findings not only broaden the understanding of these bioactive compounds but also provide a solid basis for further pharmacological research. Analyzing these essential oils reveals promising pathways for creating new medical treatments.

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