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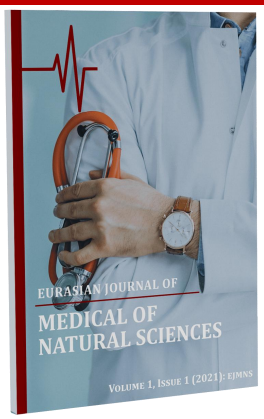

DEVELOPMENT OF TRICARDION CAPSULE TECHNOLOGY BASED ON LEONURUS TURCESTANICUS, MENTHA × PIPERITA, AND CRATAEGUS SANGUINEA PALL.: A REVIEW OF PHYTOCHEMICAL AND PHARMACOLOGICAL PROPERTIES

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ABSTRACT

The Tricardion capsule is a phytotherapeutic formulation developed using extracts of three medicinal plants: Leonurus turcestanicus, Mentha × piperita (commonly referred to as peppermint), and Crataegus sanguinea Pall. (hawthorn). These plants are native to Central Asia and are widely found in various regions of Uzbekistan. Each species has a long-standing history in traditional medicine and is known for its cardiovascular, anti-inflammatory, and antispasmodic properties. This review aims to summarize the botanical characteristics, phytochemical compositions, and pharmacological effects of the three plants. The potential synergistic benefits of combining these botanical ingredients into a single capsule are also discussed. Emphasis is placed on their cardiovascular applications, which form the basis for the development of the Tricardion capsule. The article draws from regional and international scientific literature, including studies conducted by Uzbek researchers. The findings support the scientific rationale for using these plants in combination for the prevention and management of cardiovascular conditions.

Introduction

Medicinal plants have played a vital role in traditional healthcare systems for centuries, particularly in regions where access to synthetic pharmaceuticals is limited. In Uzbekistan, a country rich in botanical diversity, plant-based medicine continues to be an essential part of both folk and formal medical practice. Among the numerous species used in herbal remedies, Leonurus turcestanicus, Mentha × piperita (commonly referred to as peppermint), and Crataegus sanguinea Pall. (a species of hawthorn) are known for their cardiovascular and sedative properties.

The Tricardion capsule is a new herbal formulation developed to support cardiovascular function using the extracts of these three plants. Each of them contributes unique phytochemical compounds that may work together to improve heart health, regulate

blood pressure, and ease symptoms associated with stress and anxiety. These effects are particularly relevant in Uzbekistan, where cardiovascular diseases are among the most common causes of morbidity and mortality.

Previous pharmacological studies and ethnobotanical surveys conducted by local and international researchers have provided valuable insights into the therapeutic potentials of these plant. However, there is still a need to consolidate these findings into a comprehensive review that highlights their combined usage. This article aims to analyze existing literature on the phytochemistry, geographical distribution, seasonal availability, and medicinal applications of Leonurus turcestanicus, Mentha × piperita, and Crataegus sanguinea, with a focus on their relevance to the development of the Tricardion capsule.

Through this review, we hope to provide a clearer understanding of how these three botanicals can contribute to modern phytotherapy and support ongoing research and product development in Uzbekistan's growing herbal medicine sector.

Methods

This review article was developed through a structured search and analysis of scientific literature related to the pharmacological and botanical properties of Leonurus turcestanicus, Mentha × piperita, and Crataegus sanguinea Pall.. Primary sources were selected from peer-reviewed journals, academic dissertations, pharmacological databases, and publications by regional scholars, including works by Toshov Pulatova, Morozova T., and the collaborative studies of Bekbolatova E.N., Sakipova Z.B., and others.

The following databases and resources were used in the literature search: Google Scholar, PubMed, eLibrary.ru, and the Central Asian Journal of Medicine. Keywords such as "Leonurus turcestanicus pharmacology," "Crataegus sanguinea cardiac effects," "Mentha piperita Uzbekistan," and "herbal cardiovascular remedies" were used in both English and Russian to gather more comprehensive information. Relevant articles were selected based on their focus on chemical composition, medicinal applications, and distribution of the plants.

In addition to international sources, local dissertations and research conducted in Uzbekistan were reviewed to identify region-specific findings and applications. Works by Davlatova M.S. and Amonov M.K.U. were considered particularly valuable for their insights into the use of these plants in traditional Uzbek medicine.

The information collected was categorized according to the plant species, their active compounds, physiological effects, and relevance to cardiovascular and neurological health. Emphasis was placed on studies that explored the synergistic effects of combining multiple plant extracts or formulations intended for cardiovascular support.

Results

The literature reviewed reveals substantial pharmacological and ethnobotanical information supporting the medicinal use of Leonurus turcestanicus, Mentha × piperita, and Crataegus sanguinea Pall.. Each plant contributes bioactive compounds known for cardiovascular and neurological effects, making them suitable components for the Tricardion capsule.

1. Leonurus turcestanicus

This plant, commonly found in the mountainous regions of Central Asia including Uzbekistan, belongs to the Lamiaceae family. It typically grows in spring and early summer

(April to June) and thrives in semi-arid soil conditions. According to Toshov Pulatova and regional studies, its aerial parts contain alkaloids, flavonoids, and iridoids that contribute to sedative, hypotensive, and cardiotonic properties. Clinical and preclinical studies have shown that extracts of Leonurus turcestanicus help regulate heart rhythm and reduce anxiety symptoms.

2. Mentha × piperita (Folia Menthae Piperitae)

Widely cultivated across Uzbekistan, especially in the Fergana Valley and Tashkent region, peppermint leaves are harvested in summer, typically from June to August. The plant is rich in essential oils, particularly menthol, menthone, and menthyl acetate, which demonstrate antispasmodic, carminative, and mild analgesic effects. Research by Morozova T. (dissertation) and other Central Asian studies confirms its use in treating digestive discomfort and as a mild sedative in cardiovascular disorders.

3. Crataegus sanguinea Pall.

This species of hawthorn grows in temperate forested areas of Uzbekistan, including the western Tien Shan range. It is harvested between May and September, depending on altitude. The fruits and flowers contain flavonoids (rutin, hyperoside), triterpenoids, and procyanidins, which have been shown to enhance coronary blood flow, reduce arterial pressure, and provide antioxidant protection to cardiac cells. Bekbolatova E.N. et al. have documented hawthorn's efficacy in managing mild heart failure and arrhythmias in traditional and modern treatments.

Synergistic Benefits

When combined, these three plants offer a broad spectrum of therapeutic actions: cardiotonic, antihypertensive, anti-inflammatory, and anxiolytic. The literature suggests that using these botanicals together may produce enhanced effects due to the complementary actions of their active components. This synergy forms the scientific foundation for the formulation of the Tricardion capsule.

Discussion

The synergy of these three botanicals forms a rational basis for Tricardion capsule development:

Cardioprotective Effect: The combined hypotensive action of Leonurus turcestanicus and Crataegus sanguinea enhances myocardial perfusion and reduces heart rate and blood pressure.

Anxiolytic and Neuroprotective Role: Sedative effects from Leonurus and Mentha piperita can be beneficial for stress-related cardiovascular disorders.

Antioxidant Activity: All three plants possess polyphenolic compounds that scavenge free radicals, reducing oxidative stress implicated in cardiac pathologies.

Availability and Sustainability: These plants are readily available in Uzbekistan and can be sustainably harvested between May and September, supporting local production.

The next phase in capsule development includes optimizing extraction methods, standardizing active compounds, and evaluating pharmacological efficacy through in vitro and in vivo studies.

Conclusion

The Tricardion capsule, incorporating Leonurus turcestanicus, Folia Menthae Piperitae, and Crataegus sanguinea Pall, represents a promising phytotherapeutic strategy for cardiovascular support. Uzbekistan's natural flora offers not only a reliable source of these medicinal plants but also the potential for innovative pharmaceutical development.

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