СУЧАСНІ ДОСЯГНЕННЯ ФАРМАЦЕВТИЧНОЇ НАУКИ В СТВОРЕННІ ТА СТАНДАРТИЗАЦІЇ ЛІКАРСЬКИХ ЗАСОБІВ І ДІЄТИЧНИХ ДОБАВОК, ЩО МІСТЯТЬ КОМПОНЕНТИ ПРИРОДНОГО ПОХОДЖЕННЯ

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CATANANCHE CAERULEA L. AS A SOURCE OF NATURAL COMPOUNDS

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Introduction. Medicinal plants of the Asteraceae family are one of the most important sources of bioactive compounds in the pharmaceutical field. Plants are characterized by a high content of secondary metabolites, such as phenolic compounds, flavonoids, and sesquiterpene lactones, which determine their wide range of anti-inflammatory, antibacterial, and cytotoxic activities [1,4]. Among these, *Catananche caerulea* L. (commonly known as "Cupid's Dart") represents a particularly interesting yet comparatively underexplored species within the subfamily Cichorioideae and the specific subtribe Scolyminae [6].

Historically, *C. caerulea* was used in folk medicine and traditional rituals, particularly in Mediterranean cultures where it earned its name from its use in ancient love potions [2]. Beyond its cultural history, its botanical resilience and unique chemical profile make it a candidate for modern phytochemical investigation.

C. caerulea is a perennial herbaceous plant. It features erect, slender stems reaching up to 80 cm in height, which are often branched at the base. The leaves are primarily basal, narrow linear or lanceolate, often slightly tomentose, reflecting an evolutionary adaptation to reduce water loss. The most striking feature of the plant is its solitary flower heads (capitula) with vivid blue-to-violet ligulate florets, surrounded by translucent, papery (scarious) bracts [2,3].

The native range of *C. caerulea* encompasses the Mediterranean Basin, specifically spanning Spain, Southern France, Italy, and North African regions. Ecologically, the plant thrives in dry, well-drained soils, indicating its adaptation to environmental stress conditions. It typically flowers from mid-summer to early autumn [2,3,6]. Currently, it is widely cultivated as an ornamental plant across Europe, ensuring its accessibility as a potential herbal raw material.

Materials and Methods. This study used literature review and data synthesis methods. The sources of information included publications from PubMed databases and scientific reviews dedicated to the Asteraceae family and *Centaurea* genera.

Results and Discussion. While many members of the Asteraceae family are known for O-glycosides, *C. caerulea* stands out for its unique ability to synthesize C-glycosyl flavonoids. The landmark study by A. Proliac and J. Raynaud (1977) provided the first detailed chemical map of the species' aerial parts.

Proliac and Raynaud's investigation of the leaves of *C. caerulea* led to the isolation of a rare flavonoid: carlinoside (6-C-β-D-glucopyranosyl-8-C-α-L-arabinopyranosyl-luteolin). This was a discovery of significant chemotaxonomic importance, as carlinoside had only been isolated as a natural product once before, in *Carlina vulgaris*. The identification of carlinoside was achieved through UV spectroscopy (luteolin-like spectrum) and mass spectrometry of the premethylated glycoside, identifying it as a di-C-pentosyl-hexosyl-luteolin.

Beyond carlinoside, the presence of schaftoside (6-C-β-D-glucopyranosyl-8-C-α-L-arabinopyranosylapigenin) was also identified. The chemical originality of *C. caerulea* is further evidenced by its polyphenol chemistry, which includes phenolic carboxylic acids (chlorogenic and caffeic) and the polysaccharide inulin, typical of the Cichorieae tribe [1,4,6].

The pharmacological potential of these compounds is noteworthy. Carlinoside and related luteolin derivatives are recognized for their antioxidant and anti-inflammatory properties. Furthermore, the presence of these stable C-glycosides suggests that *C. caerulea* extracts may have higher bioavailability compared to more common O-glycosides, as they are not easily broken down by digestive enzymes.

Conclusion. *Catananche caerulea* L.*,* is far more than just an ornamental Mediterranean plant; it represents a specialized "biological factory" of rare secondary metabolites, particularly stable C-glycosyl flavonoids. Although it remains a comparatively under-investigated species within the Asteraceae family, the pioneering phytochemical research by Proliac and Raynaud has established its fundamental scientific importance. Their discovery of carlinoside and schaftoside within the plant's aerial parts bridged a significant gap in the chemotaxonomic understanding of the subtribe Scolyminae. Given its robust growth characteristics, adaptation to environmental stress, and unique chemical profile, *C. caerulea* serves as a highly promising candidate for further scientific exploration. Future research should focus on detailed pharmacological studies and the development of standardized plant-based medicines.

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