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REVIEW

A RECENT REVIEW ON ETHNOMEDICINAL, PHYTOCHEMICAL, AND PHARMACOLOGICAL ACTIVITIES OF MAJOR *ASTRACEAE* FAMILY PLANTS IN THE MĂCIN MOUNTAIN NATIONAL PARK, ROMANIA

Ahmed A. Zeinhom[1], Rodica Mihaela Dinica[2*], Mariana Lupoae[3*], Fanica Balanescu[3], Andreea Nistor[2], Anna Busuioc[2], Andreea Botezatu[2], Bianca Furdui[2], Caterina Dumitru[3]

[1]Ain Shams University, Faculty of Pharmacy/Pharmaceutical Chemistry Department, 11566, Abbassaia, Cairo, Egypt
[2]Dunărea de Jos University, Faculty of Sciences and Environment/ Department of Chemistry, Physics and Environment, 800008, Galați, Romania
[3]Dunărea de Jos University, Faculty of Medicine and Pharmacy/ Department of Pharmaceutical Sciences, 800010, Galați, Romania

*Corresponding author: rodica.dinica@ugal.ro; mariana.lupoae@ugal.ro

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Abstract: Măcin Mountain National Park is a large, protected area in Tulcea County, Dobrogea, Romania. This park represents Romania's ancient geological, scientific, and archaeological sites, making it one of the top-ranked tourist destinations in the country. On this small territory (0.05 % of the country's surface), and in an area of 11,000 hectares, more than half of the Romanian flora can be found. This region stand out by its impressive fauna and flora. 72 plant species are protected as vulnerable and rare species, and 27 species are considered endemic plants. The purpose of this work is to evaluate the most recent and significant reports from literature data with regards to plants from *Asteraceae* family. Thus, the focus was on analyzing the importance of these species in traditional phytotherapy and modern medicine. Emphasis was given to biological properties, which were validated through scientific research. Consequently, multiple cosmetology and food industry applications were highlighted. Last but not least, studies concerning the safety uses and biotechnological research were presented.

Keywords: *antimicrobial activity, antioxidant, Astraceae family plants, Măcin Mountains*

INTRODUCTION

Măcin Mountains National Park is located in the southeastern region of Romania, in Tulcea County, between the Black Sea and the Danube River [1]. This park is designated as a protected area by governmental law and falls under the jurisdiction of the Ministry of Agriculture and Rural Development. It is well known for its geographical complexity ranging from mountaenous areas to plains and river valleys. The flora is highly diversified and consists of flowers, herbs, trees, and seedlings, some of which being protected by law [2].

This area are known for hosting many endemic plants such as *Symphytum tauricum* (comfrey), *Paeonia peregrina* (Romanian peony), *Crocus variegatus* (crocus), and other *Asteraceae* family plants such as *Achillea millefolium* (yarrow), *Achillea foetida*, *Achillea coarctata* (yellow milfoil), *Achillea leptophylla*, *Carduus nutans*, *Centaurea diffusa*, *Centaurea affinis*, *Centaurea iberica*, *Centaurea solstitialis* (yellow velcro), *Centaurea varnensis*, *Cota tinctoria* (yellow chamomile), *Echinops sphaerocephalus* (arctic glow), and *Chondrilla juncea* (devil's grass) [1, 3].

According to the European Red List, the Măcin area includes many threatened and rare species (as shown in Figure 1), such as *Galanthus plicatus* (pleated snowdrop), *Moehringia grisebachii* (Grisebach's Moehringia), *Centaurea tenuiflora* (slender centaury), *Centaurea gracilenta* (graceful centaury), *Campanula romanica* (Romanian bellflower), and *Dianthus nardiformis* (nard-like pink) [1, 4]. Since ancient times, certain herbs have been used not only as spices but also as medicines and preservatives [4]. Aromatic medicinal plants are frequently employed to prevent chronic diseases and to provide various physiological benefits [5]. Extracts from medicinal herbs contain a significant number of polyphenolic compounds that possess both antioxidant and antibacterial properties [6, 7].

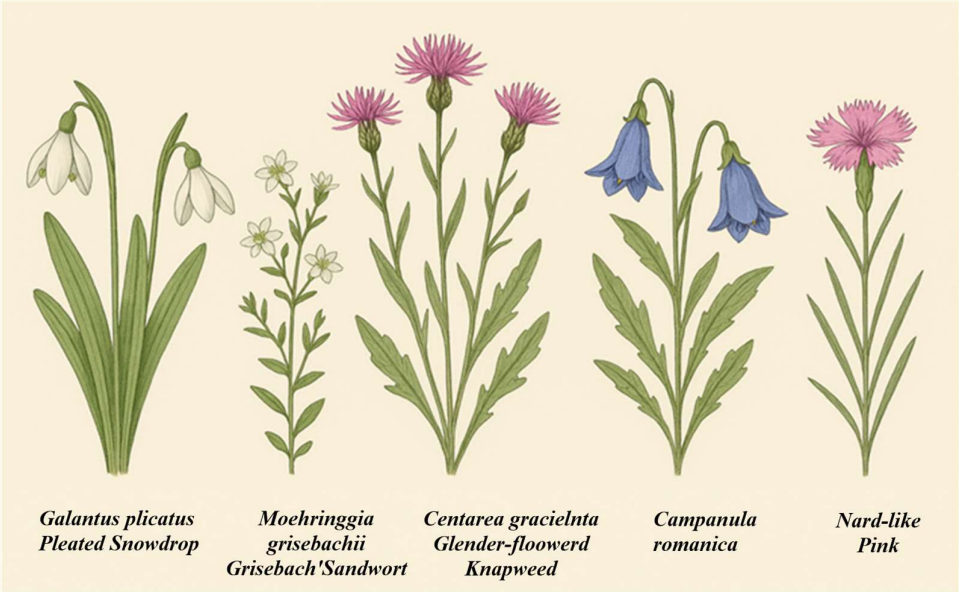


Figure 1. *Graphical representation of endangered and rare plants in the Măcin mountain area*

Medicinal plant powders and extracts usually contain several different chemical compounds that may act independently, in combination or synergistically, to improve health. For instance, it is known that phenolic and flavonoid compounds are responsible for antioxidant and antinflamatory activities [8] whereby bitter substances support digestion [9].

Many studies have explored the effects of antioxidants, especially because an imbalance between antioxidants and pro-oxidant factors which is known to play a key role in various diseases. This imbalance is commonly linked to the trigger and progression of inflammation, metabolic disorders, degenarative diseases and even cancer [10].

Antioxidant properties and identification of specific antioxidant compounds can be assessed through analytical methods designed for specific targets within biological matrices. However, there is no universally accepted method to measure antioxidant capacity accurately and consistently.

Various methods have been developed and applied in different systems, but results are often inconsistent; therefore, multiple testing methods are recommended. These methods include those based on synthetic antioxidants or free radicals, as well as those using animal or plant cells. They differ in reagents, substrates, experimental conditions, media, and assessment techniques [11].

Different studies estimate that two-thirds of the world's botanical species are included in medicinal plant list primarily due to their antioxidant properties. Thus, traditional phytotherapeutic species are increasingly integrated into pharmaceutical and food applications. Medicinal plants offer a promising alternative to synthetic products due to their nutritional value and bioactive properties [12].

In recent decades, the rapid growth of the global population has shifted scientific attention toward increasing food production. However, significant crop losses continue to occur due to plant and insect diseases caused by bacteria, fungi, and viruses [13].

These microbial pathogen species compromise the quality, stability and safety of food products, which in turn required the introduction and frequent usage of synthetical chemical compounds. However, these chemical substances, sometimes are more toxic than natural compounds, being persistent in the enviroment and human body, thus having harmful effects on health and quality of food products [14]. Extensive use of pesticides, even if it increases agricultural efficiency against pests, can lead to contamination of fruits and vegetables. In turn, this affects the preservation of foods and contributes to environmental pollution through secondary products that are low on biodegradability. Moreover, chronic exposure to these residues is associated with serious risks for human health, among which can beendocrine disruption, neurodevelopmental disorders and various types of cancer, primarily seen among vulnerable categories [14].

Nowadays, the public health sector challenges demand innovative and environmentally friendly solutions. Măcin Mountains, with its medicinal flora diversity can represent a potential important source for these aspects. These species are known for their phytochemical compounds with therapeutic effect, being used thourghout history in traditional medicine as well as in modern applications. The present study aims to investigate the biological properties of certain species belonging to *Asteraceae* family. In particular, the current research evaluates antioxidant and antifungal activity and other pharmacodynamic effects of obtained extracts from various plant parts (flowers, leaves and stem) harvested from Măcin Mountains region.

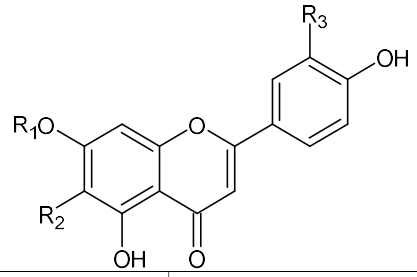
ASTERACEAE FAMILY MEDICINAL PLANTS FOUND IN THE MĂCIN MOUNTAIN

Asteraceae family (also known as *Compositae*) reunites a vast number of flower plants, grouped in 1.600 genus and more than 23.000 species. Among these, *Achillea* genus stands out through its diverse use in pharmaceutical and therapeutical usage, being valued in traditional and popular medicine [15]. *Asteraceae* plants, appreciated for their rich phytochemical composition of flavonoids, phenolic acids, terpens and volatile compounds, stand out thorugh a large spectrum of biological actions. This ranges from antioxidant and anti-inflamatorry effects to antimicrobial and antitumoral properties. This explains the traditional utility in mitigating pain, inflammation and digestive disorders but also the interest in integrating these in natural therapies and modern pharmaceutical products [16]. These secondary metabolites, particularly antioxidant polyphenolic and flavonoidic compounds, significantly contribute to plant resilience against stressors, by lowering oxidative stress and maintaining cellular homeostasis [17].

Achillea millefolium L.

Achillea genus is made of almost 130 species and is spread over temperate regions of the northern hemisphere, particularly in Asia and Europe. *Achillea millefolium* L. represents the most well-known species and has a documented traditional use of more then three millennia. Plants from the genus *Achillea* are used in different therapies as an antihemorrhagic, for tissue repair, for treating skin disorders, for increased perspiration, to stimulate urinary excretion or as anthelmintic and anti-ulcerative agents [15, 18, 19]. *Achillea millefolium* is obvious for its complex phytochemical content, especially essential oils and polyphenolic compounds (Table 1), recent clinical studies confirming the effectiveness of the flower infusion in alleviating of gastrointestinal and menstrual pains but also to manage unpleasant symptoms associated with menopause [18, 20, 21].

Table 1. *Chemical structures of isolated flavonoids from Achillea millefolium* L.



Flavonoids name	**SUBSTITUENTS**		
	R_1	R_2	R_3
1. Luteolin	H	H	OH
2. Apigenin-7O-β-D-glucoside	Glucose	H	H
3. Luteolin-7O-β-D-glucoside	Glucose	OH	OH
4. 6-OH-luteolin 7O-β-D-glucoside	Glucose	OH	OH

The presence of flavonoids such as apigenin confers on plants of the genus *Achillea* emmenagogue function due to its estrogenic effects, showing to modulate positively α- and β-estrogen receptor pathways [22].

In Romania, *Achillea millefolium* is commonly used for digestive system disorders, being among the most frequently used herbs for the care of various skin diseases [23]. Majorly presence of flavonoids such as apigenin VI and luteolin V in *Achillea millefolium* L. confer the species the ability to serve as a natural dye for wool fibers [24].

The various therapeutic properties due to the above-mentioned pytochemicals, are illustrated in Figure 2.

Owing to these medicinal properties, many folk and traditional remedies incorporate extracts or powdered forms of *Achillea millefolium* L., that are indicated for gastrointestinal ailments and various inflammatory skin pathologies-including psoriasis, atopic dermatitis, eczema and rosacea-as well as for visceral pain relief [25, 26].

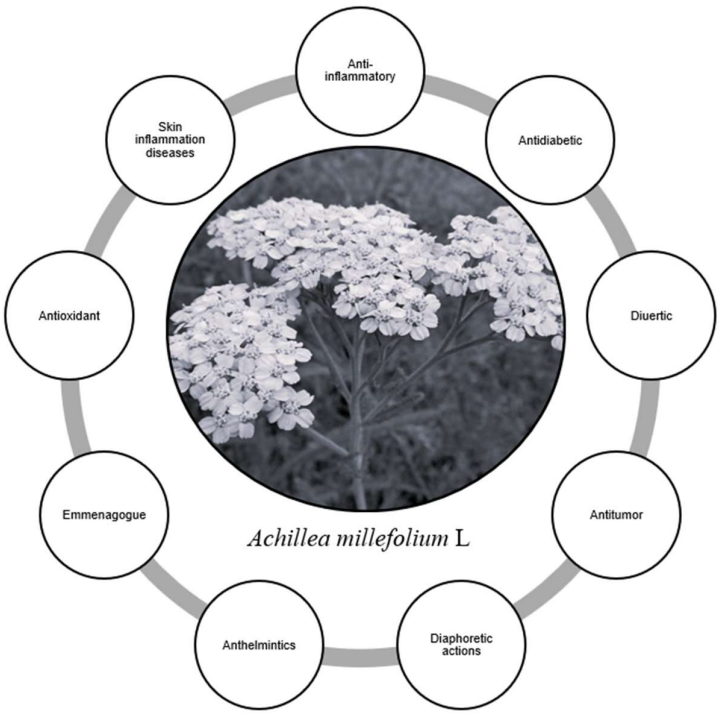


***Figure 2**. Illustration of the most important biological activities of Achillea millefolium species*

***Taraxacum officinale* L.**

Taraxacum officinale L. (commonly known as common dandelion) is an herbaceous perennial plant belonging to the family *Asteraceae*. It is widely utilized for its medicinal, nutritional, and pharmaceutical properties, including diuretic effects and the alleviation of gastrointestinal symptoms. Taraxacum is employed in cases of digestive weakness, impaired hepatic function, and has therapeutic applications in oncology. Despite being considered an ordinary garden plant, common dandelion has been an important part of Chinese medical heritage, since it was used to treat various diseases ranging from gastrointestinal disorders to tumours in lungs, breasts and uterus [27].

Taraxacum officinale L. is known for their rich content of secondary metabolites such as, polyphenols, flavonoids, terpenoids and triterpenoids compounds with strong biological properties. The highest levels of these compounds, which are localized in leaf and flower tissues, have been identified in hydroxycinnamic acid derivates, particularly caffeic chlorogenic, ferulic, cichoric and p-coumaric acid. These compounds contribute to the antioxidant and anti-inflammatory dandelion's properties [28, 29]. In Figure 3 are presented the flavonoids identified in *Taraxacum* species, such as quercetin, apigenin, luteolin, isoetin, hesperetin, artemetin and genkwanin, which occur both as aglycones and as their corresponding glycosidic forms. It is noteworthy that some studies note that the presence of luteolin diglycosides in the leaves, and luteolin 7-O-glucoside in the flowers, lead to the antidiabetic effects of *Taraxacum officinale* L. [30, 31].

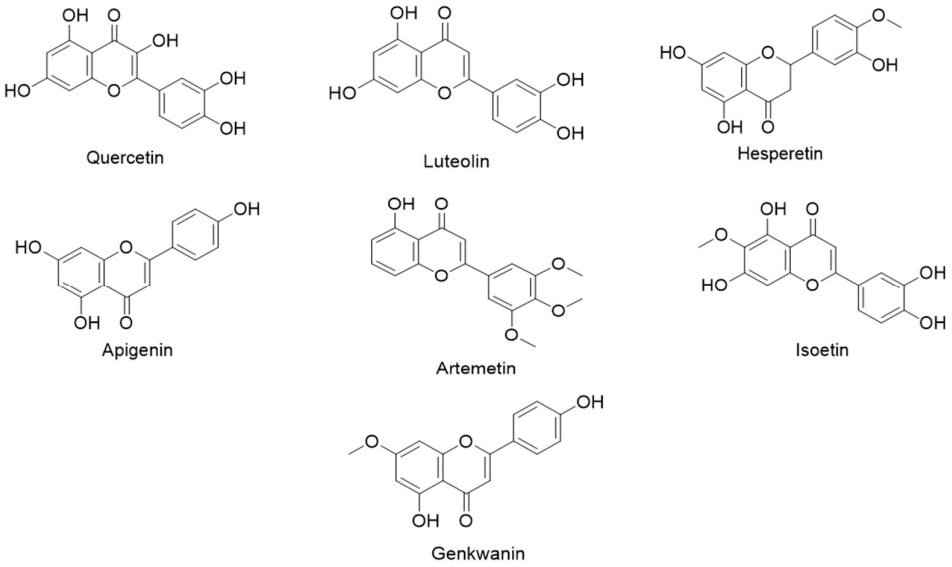


Figure 3. *Chemical structures of Taraxacum officinale* L. *flavonoids*

From different parts of the *Taraxacum mongolicum* and *Taraxacum officinale* plants have been also extracted bioactives triterpenoids such as: α-amyrin, β-amyrin, taraxasterol, arnidiol, Ψ-taraxasterol, cardiol and taraxacinic acid. Sterols such as β-sitosterol and stigmasterol have been detected as well. The therapeutic potential of these plants in inflammation, tumours and diabetes are linked with the presence of triterpenoids such as taraxasterol in roots [32, 33].

Organic acids such as malic, citric, fumaric, ascorbic, oxalic and quinic acids (Figure 4) have been also identified in various *Taraxacum* species [34].

In the Middle East, *Taraxacum* species are used in traditional medicine, as a remedy for spleen and liver diseases, and on the American continent, since the 16th century, dandelion was used as a liver stimulant, diuretic, to treat digestive problems such as indigestion, heartburn, kidney diseases, but also chronic skin diseases [35]. In Eastern Europe, in countries such as Romania, Poland, Bulgaria and Hungary are among the primary suppliers of dandelion species, young plants being grown and then transplanted annually, starting from April or June [36 – 38].

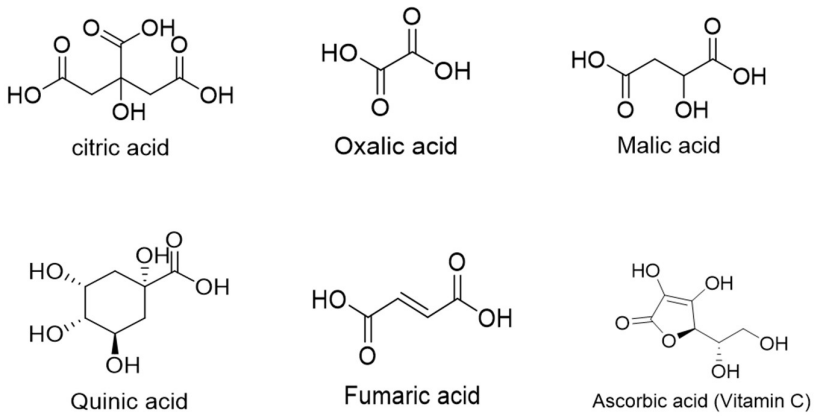


Figure 4. *Organic acids identified in Taraxacum officinale* L.

Dandelion plants, inflorescences, corollas, aerial parts and roots can be used in various culinary recipes. Young leaves can be ingested in raw form through salads and the root can be roasted and used as a complementary ingredient in various food products. The dandelion root extract has been used so far in traditional medicine as a detoxifying agent for digestive diseases, and lung, breast, and uterus tumours. However, little scientific progress has been made in this area regarding the effect of the dandelion root extract on cancer and skin cancer. The protective effect against inflammation and oxidative stress was also emphasized.in a study conducted by Menke and his collaborators which showed that *Taraxacum* root extract can be used in chemoprevention and has rapid, nontoxic, and specific action for cancer cells in human melanoma, making it a valuable chemotherapeutic agent [39].

Taraxacum officinale L. extract contains a diverse range of pharmacologically active compounds, including sesquiterpene lactones, triterpenoids, sterols, and flavonoids such as luteolin. Recent studies have demonstrated that dandelion exhibits anticancer properties. Specifically, dandelion root extract has shown anticancer effects against certain types of cancer [40].

Multiple active biological compounds have been identified in all plant structures.

***Arctium lappa* L.**

Arctium lappa L. is another specie present in the Măcin area, popularly known as burdock. Traditionally, this plant is consumed as a vegetable in East Asia and is increasingly considered an ingredient in functional foods [41]. In the burdock extract, countless biologically active compounds such as polyphenols and flavonoids, polysaccharides or polyunsaturated fatty acids have been identified, phytochemical compounds that are responsible for its various biological and pharmacological properties. Natural fructan-type polysaccharides (inulin) isolated especially from the root of *Arctium lappa* L. have attracted particular attention, due to the growing interest in identifying and structural characterization of polysaccharides with a functional role and also with a beneficial effect on human health [42].

Arctium lappa L. (depicted in Figure 5A) is traditionally used as a depurative, diuretic, gastrointestinal stimulant, and for treating skin inflammatory disorders. Numerous health benefits attributed to the plant's bioactive secondary metabolites have been

investigated. Additionally, previous studies have demonstrated that burdock exhibits hepatoprotective effects and antimicrobrial activities against bacterial strains from Gram classes.

For instance, a 2015 study reported the therapeutic efficacy of burdock extract on liver damaged by paracetamol admnistering in mice experiments [43].

Arctigenin, a secondary metabolite of phenylpropanoid lignan type, was identified for the first time in nutritional supplements dervied from burdock.

In the recent decades, interest in secondary metabolites of *Arctium lappa* L. has grown considerably.

Particularly arctigenin and its glycoside arctiin (chemical structures shown in Figures 5B and 5C), have garnered considerable scientific interest due to their potential in modulating acute inflammatory responses [44].

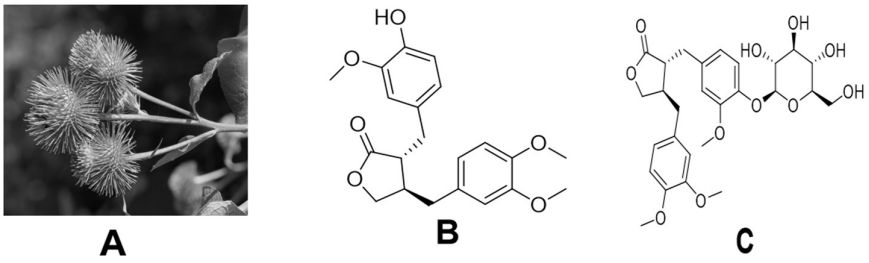


Figure 5. *A - Articum lappa* L. *plant, B - chemical structure of arctigenin, C - chemical structure of arctiin*

The protective effects of arctigenin in mitigating inflammation associated with LPS-ALI was emphasized through signifficantly decreasing the level of inflammatory factors (iNOS, MAPK, HO-1) in cell lines RAW264.7 [45].

Multiple *in vitro* studies have confirmed that the initial stages of the anti-inflammatory cascade involve inhibition of nitric oxide production *via* suppression of iNOS enzyme activity [46].

The hydro-alcoholic extract of *Arctium lappa* L. root has demonstrated efficacy against type 2 diabetes [47, 48]. The antioxidant constituents present in *Arctium lappa* L. extracts exhibit protective effects on cells, contributing to the reduction of cellular mutations and the prevention of tumor formation [49]. A recent study conducted in 2025 investigated the anticancer and immunomodulatory properties of both root and aerial part extracts of *Arctium lappa* L. targeting its antitumor activity against MDA-MB-231 and MCF-7 cells.

Using the MTT test, overall extract and chloroform fraction from the aerial parts showed significantly greater inhibition of cancer cell proliferation compared to the root extracts. Furthermore, gene expression analysis of this extract highlights its anti-inflammatory and antineoplastic effects. Research findings demonstrate a significant stepdown of TLR4 and NF-κB expression in the MCF-7 cell line. Both cell lines (MCF-7 and MDA-MB-231) were suppressed even by low concentrations of the chloroform fraction from the aerial parts of *A. lappa,* through a selective cytotoxic mechanism, which is highly relevant in metastasis [50].

***Calendula officinalis* L.**

Alternatively known as marigold, *Calendula officinalis* L. has a long-standing history in traditional medicine and is highly valued for its broad spectrum of therapeutic effects. In general, alcohol-based tinctures present anti-inflammatory properties due to triterpenoid esters of fatty acids, such as myristoyl, lauryl and palmitoyl esters. The plant's strong antioxidant activity is primarily attributed to carotenoids like lycopene, lutine, ubiquinone and quercitin (chemical structures shown in Figure 6). In addition, studies have shown anticancer, wound-healing, hepatoprotective and immunostimulatory effects [51, 52]. Due to its versatile therapeutic profile, *C. officinalis* extracts are used in applications such as creams, tinctures, infusions and mouthwashes dental, general medicine and as a photoprotective agent [53].

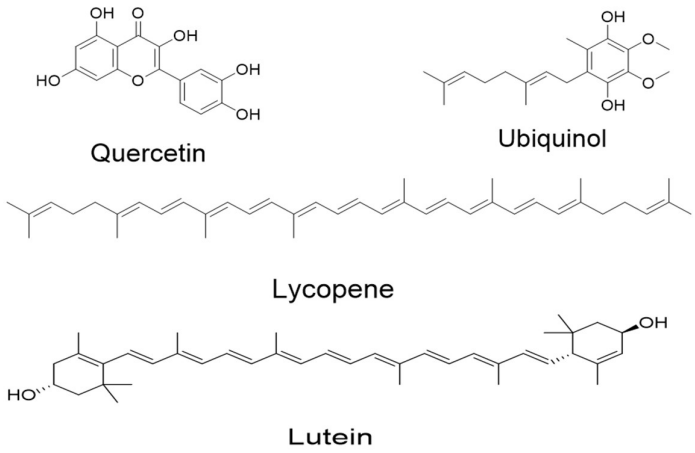


Figure 6. *Compounds identified in Calendula officinalis* L.

Having a high efficiency in catching free radicals, marigold oil is used effectively as an antioxidant in various cosmetic products, particularly as a sunscreen agent [54].

Methanol and ethanol extracts from the flowers, leaves, stems, and roots of *Calendula officinalis* L. have demonstrated antibacterial, antifungal, antihelminthic, and anti-HIV activities [55]. These extracts were tested against several microbial species, including *Klebsiella pneumoniae, Staphylococcus aureus, Bacillus subtilis, Aspergillus niger, Candida albicans* and *Escherichia coli.*

The tests have indicated antimicrobial properties of the extracts particularly against *Escherichia coli* with a determined MIC (minimum inhibitory concentration) of 300 $\mu g \cdot mL^{-1}$ [51, 56]. The anti-HIV activity was observed using methanol-methylene chloride extracts in an MTT/tetrazolium-based assay, demonstrating inhibition of HIV reverse transcriptase (HIV-RT) and suppression of HIV-mediated fusion at concentrations of 1000 $\mu g \cdot mL^{-1}$ and 500 $\mu g \cdot mL^{-1}$, respectively [57].

Clinical studies have further confirmed the therapeutic potential of *Calendula officinalis* L. extract. Promising results have been obtained regarding the prevention of radiation-induced dermatittis associated with oncological treatmens [58], and it has also proven effective in the treatment of deep burns [53].

According to recent studies, *Calendula officinalis* L. may have a protective role on neurons affected by Parkinson's disease.
Pharmaceutical products based on extracts of *Calendula officinalis* L. exhibited significant neuroprotective effects in zebrafish larvae, showing 96.54 % length and 87.77 % fluorescence density improvements relative to positive drug controls in dopaminergic receptors, as assessed by LC–MS/MS (Liquid Chromatography with tandem mass spectrometry assay). The bioactive compounds identified such as rutin, calenduloside E (CE), chlorogenic acid, 3,4-dicaffeoylquinic acid (DA), and isorhamnetin 3-O-glucoside (IG) were found. Their effects exerted mainly through inhibition of the ERK (extracellular regulated kinase) signaling pathway and activation of the PI3K/Akt (phosphoinositide 3-kinase/protein kinase B) pathway, resulting in prevention of neuronal death and reduced neurodegeneration [59].

***Matricaria chamomilla* L.**

Chamomile (*Matricaria chamomilla* L.), a member of the *Asteraceae* family, is one of the oldest medicinal herbs used worldwide for a broad spectrum of ailments. Its therapeutic properties have been recognized and studied for centuries, with the ancient Egyptians referring to it as the "flower of the sun" [60]. Chamomile is traditionally used to treat ulcers, inflammation, wounds, stomach pain, gastrointestinal tract (GIT) disorders, and rheumatism. Pharmaceutical preparations of chamomile, including alcoholic tinctures and infusions (herbal teas), are widely employed in both traditional and modern medicine. Its essential oils are applied topically for the treatment of wounds, burns, cuts, rashes, and skin allergies [61 – 63]. The anxiolytic, spasmolytic, and sedative effects of chamomile have been confirmed in numerous studies [60].
Chamomile contains approximately 120 bioactive metabolites, among which 36 are flavonoids and 28 are terpenoids. The primary bioactive groups include flavonoids, sesquiterpenes, coumarins, and polyacetylenes. Notable constituents are apigenin and its derivatives, alpha-bisabolol, and quercetin [63]. The concentration of these compounds varies among different chamomile varieties. For instance, the essential oil from Roman chamomile (*Chamaemelum nobile*) contains esters of tiglic acid and angelic acid, as well as low levels of chamazulene (illustrated in Figure 7). In contrast, German chamomile flowers (*M. recutita*, synonym *M. chamomilla*) are rich in alpha-bisabolol and various terpenoids [60].

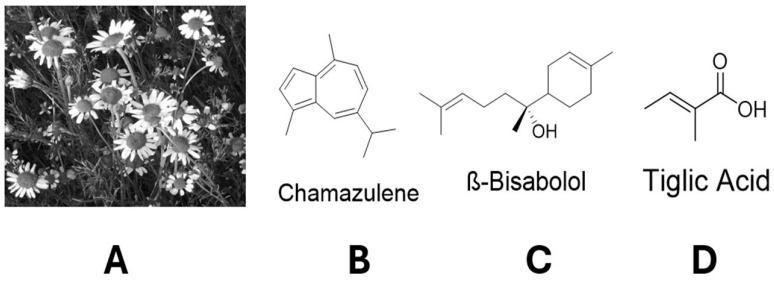


***Figure 7**. A - Matricaria chamomilla* L. *plant, B - chemical structure of chamazulene C - chemical structure of β-bisabolol, D - chemical structure of tiglic acid*

Matricaria chamomilla L. is a well-known herbaceous species in Eastern and Southern Europe, including Romania [64]. Previous studies have demonstrated chamomile's neuroprotective effects against oxidative stress, alongside its antioxidant, analgesic, and anti-inflammatory activities *in vitro*. However, its impact on hippocampal oxidative stress, cognitive function, neuroinflammation, and neurogenesis remains insufficiently explored [65].

The inhibitory effects of *Matricaria chamomilla* L. extract, as well as isolated compounds such as 2-hydroxy-4-methoxycinnamic acid, apigenin, and apigenin-7-O-glucoside flavonoids, against maltase and amylase enzymes have been investigated. These flavonoids demonstrated the ability to inhibit both enzymes, thereby reducing glucose transport, limiting elevation of blood sugar levels [66, 67].

Generically known as chamomile, *Matricaria chamomilla* L. is used for its active compounds, α-bisabolol and chamazulene, primarily in oral cavity diseases such as gingivitis, stomatitis, and aphthous ulcers. It also shows antimicrobial activity by inhibiting the growth of key cariogenic bacteria, including *Streptococcus mutans* and *Porphyromonas gingivalis*. Its active compounds are incorporated in various forms such as mouthwashes, infusions, and toothpastes [68].

A study conducted in 2025, by Peng and collaborators [69] investigated the effects of *Matricaria chamomilla* extract on human bronchial epithelial cells (16HBE). The results revealed a significant reduction in autophagy and apoptosis in the context of respiratory inflammation. This has been noted whilist adjusting Kif3a positive, a member of the kinesin-2 family. These findings suggest that chamomile could become an active ingredient in nutraceuticals aimed at asthma management [69].

***Artemisia absinthium* L.**

Artemisia absinthium L.*,* commonly known as wormwood, is native to both Europe and Central Asia and is highly regarded for its bioactive compounds, making it a promising candidate in medicine, the food industry, and cosmetics [70].

The primary molecules with biological activity from leaves and flowers of *Artemisia absinthium* L. are volatile compounds characterized by a strong aromatic odor [71, 72].

Among the bioactive flavonoids identified in *Artemisia* species, casticin and artemetin which differ structurally by a methyl group, are particularly notable for their diverse pharmacological activities(Figure 8). Both compounds have been extensively studied for their medicinal properties. Artemetin, in particular, has demonstrated hypotensive effects in rat models, as well as antioxidant, anti-inflammatory, and notably, antitumor activities [73, 74]. The alcoholic extract obtained by macerating the leaves of *Artemisia absinthium* L. has a high content of thujone - a bicyclic monoterpenoid with neurotoxic effects. The alcoholic beverage obtained by this method, once very popular, especially among artists, is now prohibited [75].

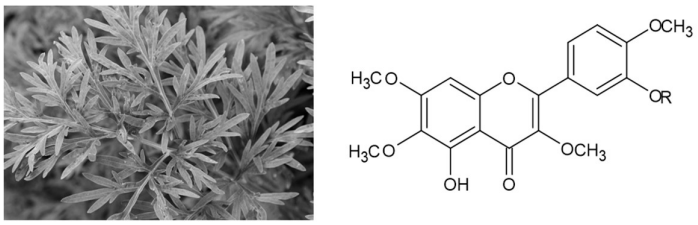
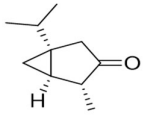


Figure 8. *A - Artemisia absinthium* L. *plant, B – chemical structures of flavonoids (casticin R = H and artemetin R = CH3)*

Artemisia absinthium L. has been used since ancient times in folk medicine in the form of tincture as an anthelmintic, antimicrobial remedy, but also for antidepressant, antioxidant, anti-inflammatory, antiseptic, antispasmodic or choleretic properties [76 – 79]. A 2018 study highlighted the potential of *Artemisia* extracts in the treatment of diabetic patients, with research showing promising action in preventing the onset of diabetes and inhibiting the progression of diabetic retinopathy [76].
A study conducted by Liu *et al.* in 2019 [77] revealed promising results on the antifungal and nematocidal activity of *Artemisia absinthium* L. extracts against soil-borne fungal pathogens.
Studies conducted since 2012 have shown that *Artemisia absinthium* extract can be used in the therapy of viper bites, constituting a valuable resource for the formulation of topical antivenoms [78].

Tanacetum species
The herbaceous plants of the genus *Tanacetum*, belonging to the *Asteraceae* family, are perennials originating in Asia but have spread throughout the world [80, 81]. Among them, species such as *T. vulgare* and *T. balsamita* have a long and ancient use in traditional medicine, demonstrating important therapeutic, antioxidant, antibacterial, antifungal or antihypertensive activities. *T. parthenium* was included in the 8th edition of the European Pharmacopoeia due to its long-standing use in the strategy of reducing the risk of migraines [82]. Among the important compounds in the *Tanacetum vulgare* L. species, the high content of volatile oils, terpenoids, sesquiterpenoids, flavonoids and polysaccharides stands out. Its insecticidal, antioxidant, and anti-inflammatory activities are primarily attributed to its terpenoids content [83]. The biological efficacy against various insects and microorganisms is correlated with the chemical variability of the essential oil, which is susceptible to external factors such as precipitation, soil type, temperature, extraction method, and plant growth stage. Notably, *Tanacetum* essential oil is considered neurotoxic, largely due to its high concentration of thujone (Figure 9) [83].



Thujone

A B

Figure 9. *A - Tanacetum plant, B - Chemical structure of thujone*

Tanacetum vulgare L. is commonly utilized in the production of insecticides, preservatives, balsams, paints, cosmetics, and pharmaceuticals. Extracts derived from this plant are widely applied in modern medicine for the treatment of rheumatism, gastrointestinal tract (GIT) disorders, fever, and ulcers [84]. Over recent decades, numerous studies have explored the therapeutic potential of *Tanacetum* extracts and their secondary metabolites. Evidence indicates that chloroform, acetone, and methanol extracts from the leaves and flowers exhibit significant anti-inflammatory activity [84]. Furthermore, the aqueous extract of *Tanacetum* has been shown to exert a diuretic effect [85]. Importantly, several investigations reported no adverse side effects, including the absence of renal or hepatic toxicity following administration of these extracts [85, 86].

CONCLUSIONS

Since ancient times, medicinal plants have served as fundamental raw materials for treating a wide range of pathological diseases.

Over time, the research has advanced and led to the development of diverse extraction techniques and the identification of novel bioactive compounds from plant materials. In the last few years, economically developed countries have increased investments in the research of medicinal plants, reflecting a renewed interest in traditional natural remedies, as synthetic chemicals do not always provide comprehensive solutions to health problems. The significance of medicinal plants is frequently discussed within the fields of pharmacology and botany, recognizing their beneficial and therapeutic effects on human health, phytotherapy increasingly acknowledged as an effective complementary or alternative approach alongside modern medicine.

The Măcin Mountains stand out as one of Romania's most representative natural sites due to their extensive petrographic diversity, which contributes to notable morphological variation. Additionally, the Măcin Mountains are nationally and internationally distinguished for their unique, rare, and endemic genera and species of flora.

The *Asteraceae* family is the largest and most cosmopolitan group of flowering plants. Historically and presently, many plants within this family have been utilized as medicinal herbs. *Asteraceae* species contain a variety of bioactive compounds, among which flavonoids are considered the most important. Current studies suggest that plant-derived flavonoids may serve as health-promoting and disease-preventive dietary constituents.

AUTHOR CONTRIBUTIONS

All the authors have equal contributions to this research.

REFERENCES

1. Gavrilă, I.G., Anghel, T.: The tourism potential of vegetation with in Măcin mountains (Dobrogea, Romania), *Geographia Napocensis*, **2012**, **1**, 49-57;
2. Sanda, V., Arcuş, M.: *Sintaxonomia Grupărilor Vegetale Din Dobrogea Şi Delta Dunării*, Editura Cultura, Piteşti, **1999**;
3. Popescu, A., Donita, N., Rosca, V., Bajenaru, B.: *Vegetația Parcului Național Munții Măcinului*, Editura Silvica, **2013**;
4. Dorman, H.J.D., Bachmayer, O., Kosar, M., Hiltunen, R.: Antioxidant Properties of Aqueous Extracts from Selected Lamiaceae Species Grown in Turkey, *Journal of Agricultural and Food Chemistry*, **2004**, **52** (4), 762-770;
5. Fares, R., Bazzi, S., Baydoun, S.E., Abdel-Massih, R.M.: The Antioxidant and Anti-Proliferative Activity of the Lebanese *Olea Europaea* Extract, *Plant Foods for Human Nutrition*, **2011**, **66** (1), 58-63;
6. Rejiya, C.S., Cibin, T.R., Abraham, A.: Leaves of Cassia Tora as a Novel Cancer Therapeutic - An *in Vitro* Study, *Toxicology in Vitro*, **2009**, **23** (6), 1034-1038;
7. Güneş, A., Kordali, Ş., Turan, M., Usanmaz Bozhüyük, A.: Determination of Antioxidant Enzyme Activity and Phenolic Contents of Some Species of the *Asteraceae* Family from Medicanal Plants, *Industrial Crops and Products*, **2019**, **137**, 208-213;
8. Dumitru, C., Dinica, R.M., Bahrim, G.-E., Vizireanu, C., Baroiu, L., Iancu, A.V., Draganescu, M.: New Insights into the Antioxidant Compounds of Achenes and Sprouted Buckwheat Cultivated in the Republic of Moldova, *Applied Sciences*, **2021**, **11**, 10230;
9. Gurib-Fakim, A.: Medicinal Plants: Traditions of Yesterday and Drugs of Tomorrow, *Molecular Aspects of Medicine*, **2006**, **27** (1), 1-93;
10. Brajdeș (Dumitru), C., Bahrim, G., Dinică, R., Vizireanu, C.: Phenolics composition and their biochemical stability confirmation by *in vitro*, gastrointestinal conditions simulation, for a new functional fermented beverage based on sprouted buckwheat, *Romanian Biotechnological Letters*, **2013**, **18** (6), 8832-8842;
11. Krishnaiah, D., Sarbatly, R., Nithyanandam, R.: A Review of the Antioxidant Potential of Medicinal Plant Species, *Food and Bioproducts Processing*, **2011**, 217-233;
12. Lupoae, M., Lupoae, P., Borda, D., Cristea, V., Bocioc, E.: Allelopathic potential of the *Ranunculus rionii* and *Ceratophyllum demersum* L. extracts against microbial and microalgal cultures, *Environmental Engineering and Management Journal*, **2016**, **15** (2), 473-480;
13. Fletcher, J., Bender, C., Budowle, B., Cobb, W.T., Gold, S.E., Ishimaru, C.A., Luster, D., Melcher, U., Murch, R., Scherm, H., Seem, R.C., Sherwood, J.L., Sobral, B.W., Tolin, S.A.: Plant Pathogen Forensics: Capabilities, Needs, and Recommendations, *Microbiology and Molecular Biology Reviews*, **2006**, **70** (2), 450-471;
14. Sawyer, W-E., Nabebe, G., Izah S-C.: Public Health Implications of Pesticide Residues in Food: Risks, Regulations, and Interventions, *Greener Journal of Biomedical and Health Sciences*, **2024**, **7** (1), 31-46;
15. Mohammadhosseini, M., Sarker, S.D., Akbarzadeh, A.: Chemical Composition of the Essential Oils and Extracts of *Achillea* Species and Their Biological Activities: A Review, *Journal of Ethnopharmacology*, **2017**, **199**, 257-315;
16. Nadaf, M., Halimi Khalil Abad, M., Omidipour, R., Soorgi, H., Riahi-Madvar, A., Saleh Ghamari, E.: Ethnobotanical Knowledge, Chemistry, and Pharmacology of the *Asteraceae* Family in Iran: A Review, *Ethnobotany Research and Applications*, **2025**, **30**, 1-27;

17. Oh, M.-M., Carey, E.E., Rajashekar, C.B.: Environmental stresses induce health-promoting phytochemicals in lettuce, *Plant Physiology and Biochemistry*, **2009**, **47** (7), 578-583;
18. Jangjoo, M., Joshaghani, A., Tahernejadgatabi, F.: The role of *Achillea millefolium* in traditional medicine: a review of its use in different cultures, *Journal of Multidisciplinary Care*, **2023**, **12** (3), 152-156;
19. Eruygur, N., Koçyiğit, U.M., Taslimi, P., Ataş, M., Tekin, M., Gülçin: Screening the *in Vitro* Antioxidant, Antimicrobial, Anticholinesterase, Antidiabetic Activities of Endemic *Achillea Cucullata (Asteraceae*) Ethanol Extract, *South African Journal of Botany*, **2019**, **120**, 141-145;
20. Simion, I., Casoni, D., Sârbu, C.: Classification of Romanian Medicinal Plant Extracts According to the Therapeutic Effects Using Thin Layer Chromatography and Robust Chemometrics, *Journal of Pharmaceutical and Biomedical Analysis*, **2019**, **163**, 137-143;
21. Dall'Acqua, S., Bolego, C., Cignarella, A., Gaion, R.M., Innocenti, G.: Vasoprotective Activity of Standardized *Achillea Millefolium* Extract, *Phytomedicine*, **2011**, **18** (12), 1031-1036;
22. Innocenti, G., Vegeto, E., Dall'Acqua, S., Ciana, P., Giorgetti, M., Agradi, E., Sozzi, A., Fico, G., Tomè, F.: Vitro Estrogenic Activity of *Achillea Millefolium* L., *Phytomedicine*, **2007**, **14** (2-3), 147-152;
23. Zargari, A.: *Medicinal Plants*, 4th Edition, Tehran University Publication, Tehran, **1996**;
24. Kiumarsi, A., Abomahboub, R., Rashedi, S.M., Parvinzadeh, M.: *Achillea Millefolium*, a New Source of Natural Dye for Wool Dyeing, *Progress in Color, Colorants and Coatings*, **2009**, **2**, 87-93;
25. Edward M. Lane: U.S. Patent 12/457, 115, **2009**;
26. Saeidnia, S., Gohari, A., Mokhber-Dezfuli, N., Kiuchi, F.: A review on phytochemistry and medicinal properties of the genus *Achillea*, *Daru, Journal of Pharmaceutical Sciences*, **2011**, **19** (3), 173-86;
27. Menke, K., Schwermer, M., Felenda, J., Beckmann, C., Stintzing, F., Schramm, A., Zuzak, T.J.: *Taraxacum Officinale* Extract Shows Antitumor Effects on Pediatric Cancer Cells and Enhance Mistletoe Therapy, *Complementary Therapies in Medicine*, **2018**, **40**, 158-164;
28. Tanasa, M.V., Negreanu-Pirjol, T., Olariu, L., Negreanu-Pirjol, B.S., Lepadatu, A.C., Anghel, L., Rosoiu, N.: Bioactive Compounds from Vegetal Organs of Taraxacum Species (Dandelion) with Biomedical Applications: A Review, *International Journal of Molecular Sciences*, **2025**, **26** (2), 450;
29. Cao, X., Li, G., Xie, J., Wu, M., Wang, W., Xiao, L., Qian, Z.: Screening Antioxidant Components in Different Parts of Dandelion Using Online Gradient Pressure Liquid Extraction Coupled with High-Performance Liquid Chromatography Antioxidant Analysis System and Molecular Simulations, *Molecules*, **2024**, **29** (10), 2315;
30. López-Lázaro, M.: Distribution and Biological Activities of the Flavonoid Luteolin, *Mini-Reviews in medicinal chemistry*, **2009**, **9**, 31-59;
31. Schütz, K., Carle, R., Schieber, A.: Taraxacum- A Review on Its Phytochemical and Pharmacological Profile, *Journal of Ethnopharmacology*, **2006**, **107** (3), 313-323;
32. González-Castejón, M., Visioli, F., Rodriguez-Casado, A.: Diverse Biological Activities of Dandelion, *Nutrition Reviews*, **2012**, **70** (9), 534-547;
33. Dias, M.I., Barros, L., Alves, R.C., Oliveira, M.B.P.P., Santos-Buelga, C., Ferreira, I.C.F.R.: Nutritional Composition, Antioxidant Activity and Phenolic Compounds of Wild *Taraxacum* sect. *Ruderalia*, *Food Research International*, **2014**, **56**, 266-271;
34. Hook, I., Mcgee, A., Henman', M.: Evaluation of Dandelion for Diuretic Activity and Variation in Potassium Content, *International Journal of Pharmacognosy*, **1993**, **1**, 29-34;
35. Phillipson, J.D., Czygan, F.C., Frohne, D., Höltzel, D., Nagell, A., Pfander, H.J., Willuhn, G., Buff, W.: *Herbal Drugs and Phytopharmaceuticals: A Handbook for Practice on a Scientific Basis,* 2nd edition, Medpharm Scientific Publishers, (Editor: Bisset, Norman Grainger), London: CRC Press, **2001**;

36. Jedrejek, D., Lis, B., Rolnik, A., Stochmal, A., Olas, B.: Comparative Phytochemical, Cytotoxicity, Antioxidant and Haemostatic Studies of *Taraxacum Officinale* Root Preparations, *Food and Chemical Toxicology*, **2019**, **126**, 233-247;
37. Chun, H.: *Taraxacum*: Phytochemistry and Health Benefits, *Chinese Herbal Medicines*, **2018**, **10** (4);
38. Williams, C.A., Harborne, J.B., Geiger, H., Robin, J., Hoult, S.: The Flavonoids of *Tanacetum parthenium* and *T. vulgare* and Their Anti-Inflammatory Properties, *Phytochemistry*, **1999**, **51**, 417-423;
39. Lis, B., Olas, B.: Pro-Health Activity of Dandelion (*Taraxacum officinale* L.) and Its Food Products – History and Present, *Journal of Functional Foods*, **2019**, **59**, 40-48;
40. Williams, C.A., Goldstone, F., Greenham, J.: Flavonoids, cinnamic acids and coumarins from the different tissues and medicinal preparations of *Taraxacum officinale*, *Phytochemistry*, **1996**, **42** (1), 121-127;
41. Chan, Y.S., Cheng, L.N., Wu, J.H., Chan, E., Kwan, Y.W., Lee, S.M.Y., Leung, G.P.H., Yu, P.H.F., Chan, S.W.: A Review of the Pharmacological Effects of *Arctium Lappa* (Burdock), *Inflammopharmacology*, **2011**, **19** (5), 245-54;
42. Jiang, Y., Yu, J., Li, Y.B., Wang, L., Hu, L., Zhang, L., Zhou, Y.H.: Extraction and Antioxidant Activities of Polysaccharides from Roots of *Arctium Lappa* L.*, International Journal of Biological Macromolecules*, **2019**, **123**, 531-538;
43. El-Kott, A.F., Bin-Meferij, M.M.: Use of *Arctium lappa* Extract Against Acetaminophen-Induced Hepatotoxicity in Rats, *Current Therapeutic Research - Clinical and Experimental*, **2015**, **77**, 73-78;
44. Gao, Q., Yang, M., Zuo, Z.: Overview of the Anti-Inflammatory Effects, Pharmacokinetic Properties and Clinical Efficacies of Arctigenin and Arctiin from *Arctium lappa* L., *Acta Pharmacologica Sinica*, **2018**, **39** (5), 787-801;
45. Wu, X., Yang, Y., Dou, Y., Ye, J., Bian, D., Wei, Z., Tong, B., Kong, L., Xia, Y., Dai, Y.: Arctigenin but Not Arctiin Acts as the Major Effective Constituent of *Arctium Lappa L*. Fruit for Attenuating Colonic Inflammatory Response Induced by Dextran Sulfate Sodium in Mice, *International Immunopharmacology*, **2014**, **23** (2), 505-515;
46. Cho, J.Y., Kim, A.R., Yoo, E.S., Baik, K.U., Park, M.H.: Immunomodulatory Effect of Arctigenin, a Lignan Compound, on Tumour Necrosis Factor-α and Nitric Oxide Production, and Lymphocyte Proliferation, *Journal of Pharmacy and Pharmacology*, **2010**, **51** (11), 1267-1273;
47. Carlotto, J., de Souza, L.M., Baggio, C.H., Werner, M.F. de P., Maria-Ferreira, D., Sassaki, G.L., Iacomini, M., Cipriani, T.R.: Polysaccharides from *Arctium lappa* L.: Chemical Structure and Biological Activity, *International Journal of Biological Macromolecules*, **2016**, **91**, 954-960;
48. Li, K., Zhu, L., Li, H., Zhu, Y., Pan, C., Gao, X., Liu, W.: Structural Characterization and Rheological Properties of a Pectin with Anti-Constipation Activity from the Roots of *Arctium lappa* L., *Carbohydrate Polymers*, **2019**, **215**, 119-129;
49. Liu, W., Wang, J., Zhang, Z., Xu, J., Xie, Z., Slavin, M., Gao, X.: *In Vitro* and in Vivo Antioxidant Activity of a Fructan from the Roots of *Arctium Lappa* L., *International Journal of Biological Macromolecules*, **2014**, **65**, 446-453;
50. Samei, M., Naghavi Alhosseini, M., Enayati, A., Davoodi, H.: Cytotoxic Activity of Arctium Lappa L. Fractions on Breast Cancer Cells (MCF-7, MDA-MB-231), *Research Journal of Pharmacognosy*, **2025**, **12** (2), 1-13;
51. Patil, K., Sanjay, C., Doggalli, N., Devi, K.R., Harshitha, N.: A Review of *Calendula officinalis* Magic in Science, *Journal of Clinical and Diagnostic Research*, **2022**, **16** (2), ZE23-ZE27;
52. Saini, P., Al-Shibani, N., Sun, J., Zhang, W., Song, F., Gregson, K.S., Windsor, L.J.: Effects of *Calendula officinalis* on Human Gingival Fibroblasts, *Homeopathy*, **2012**, **101** (2), 92-98;
53. Della Loggia, R., Tubaro, A., Sosa, S., Becker, H., Saar, S.: The Role of Triterpenoids in the Topical Anti-Inflammatory Activity of *Calendula officinalis* Flowers, *Planta medica*, **1994**, **60**, 516-520;

54. Mishra, A., Mishra, A., Chattopadhyay, P.: Assessment of *in Vitro* Sun Protection Factor of *Calendula Officinalis* L. (Asteraceae) Essential Oil Formulation, *Journal of Young Pharmacists*, **2012**, **4** (1), 17-21;
55. Shahane, K., Kshirsagar, M., Tambe, S., Jain, D., Rout, S., Ferreira, M.K.M., Mali, S., Amin, P., Srivastav, P.P., Cruz, J., Lima, R.R.: An Updated Review on the Multifaceted Therapeutic Potential of *Calendula officinalis* L., *Pharmaceuticals*, **2023**, **16** (4);
56. Ali Khalid, K., Teixeira da Silva Independent, J.A.: Biology of *Calendula officinalis* Linn.: Focus on Pharmacology, Biological Activities and Agronomic Practices, *Medicinal and Aromatic Plant Science and Biotechnology*, **2012**, **6** (1), 12-27;
57. Kalvatchev, Z., Walder, R., Garzaro, D.: Anti-HIV Activity of Extracts from *Calendula officinalis* Flowers, *Biomedicine & Pharmacotherapy*, **1997**, **51**, 176-180;
58. Pommier, P., Gomez, F., Sunyach, M.P., D'Hombres, A., Carrie, C., Montbarbon, X.: Phase III Randomized Trial of *Calendula officinalis* Compared with Trolamine for the Prevention of Acute Dermatitis during Irradiation for Breast Cancer, *Journal of Clinical Oncology*, **2004**, **22** (8), 1447-1453;
59. Zhang, X., Wang, R., Finiuk, N., Stoika, R., Lin, H., Wang, X., Jin, M.: Active Compounds from *Calendula officinalis* Flowers Act via PI3K and ERK Signaling Pathways to Offer Neuroprotective Effects against Parkinson's Disease, *Food Science and Nutrition*, **2024**, **12** (1), 450-458;
60. Kolodziejczyk-Czepas, J., Bijak, M., Saluk, J., Ponczek, M.B., Zbikowska, H.M., Nowak, P., Tsirigotis-Maniecka, M., Pawlaczyk, I.: Radical Scavenging and Antioxidant Effects of *Matricaria Chamomilla* Polyphenolic-Polysaccharide Conjugates, *International Journal of Biological Macromolecules*, **2015**, **72**, 1152-1158;
61. Foschi, M., Marsili, L., Luciani, I., Gornati, G., Scappaticci, C., Ruggieri, F., D'Archivio, A.A., Biancolillo, A.: Optimization of the Cold Water Extraction Method for High-Value Bioactive Compounds from Chamomile (*Matricaria chamomilla* L.) Flower Heads Through Chemometrics, *Molecules*, **2024**, **29**, 4925;
62. Srivastava, J.K., Gupta, S.: Antiproliferative and Apoptotic Effects of Chamomile Extract in Various Human Cancer Cells, *Journal of Agricultural and Food Chemistry*, **2007**, **55** (23), 9470-9478;
63. McKay, D.L., Blumberg, J.B.: A Review of the Bioactivity and Potential Health Benefits of Chamomile Tea (*Matricaria recutita* L.), *Phytotherapy Research*, **2006**, **20**, 519-530;
64. Singh, O., Khanam, Z., Misra, N., Srivastava, M.K.: *Chamomile (Matricaria chamomilla* L.*):* An Overview, *Pharmacognosy Reviews*, **2011**, **5** (9), 82-95;
65. Ionita, R., Postu, P.A., Mihasan, M., Gorgan, D.L., Hancianu, M., Cioanca, O., Hritcu, L.: Ameliorative Effects of *Matricaria Chamomilla L*. Hydroalcoholic Extract on Scopolamine-Induced Memory Impairment in Rats: A Behavioral and Molecular Study, *Phytomedicine*, **2018**, **47**, 113-120;
66. El Mihyaoui, A., Esteves Da Silva, J.C.G., Charfi, S., Castillo, M.E.C., Lamarti, A., Arnao, M.B.: *Chamomile (Matricaria chamomilla* L.): A Review of Ethnomedicinal Use, Phytochemistry and Pharmacological Uses, *Life*, **2022**, **12** (4), 479;
67. Hwang, S.H., Wang, Z., Quispe, Y.N.G., Lim, S.S., Yu, J.M.: Evaluation of Aldose Reductase, Protein Glycation, and Antioxidant Inhibitory Activities of Bioactive Flavonoids in *Matricaria Recutita* L. and Their Structure-Activity Relationship, *Journal of Diabetes Research*, **2018**, 3276162;
68. Dumitru, C.N., Lupoae, M., Budacu, C.C., Mitea, G., Radu, M.D., Dumitru, A.O., Lupoae, A., Tatu, A., Topor, G.: Balancing the Oral Redox State: Endogenous and Exogenous Sources of Reactive Oxygen Species and the Antioxidant Role of Lamiaceae and Asteraceae, *Dentistry Journal*, **2025**, **13**, 222;
69. Peng, J., Zhao, F., Kang, X., Aierken, N., Li, Q.: *Matricaria Chamomilla* L. Ameliorates Asthma by Protecting OVA-Induced Rats and LPS-Induced Human Bronchial Epithelial Cells Through Suppressing Autophagy and Apoptosis, *Food Science and Nutrition*, **2025**, **13** (2), 70030;

70. Liu, Z., Li, X., Jin, Y., Nan, T., Zhao, Y., Huang, L., Yuan, Y. New Evidence for *Artemisia absinthium* as an Alternative to Classical Antibiotics: Chemical Analysis of Phenolic Compounds, Screening for Antimicrobial Activity. *International Journal of Molecular Sciences*, **2023**, **24** (15), 12044;
71. Goud Busineni, J., Goud, A. N., Awamy, C.: A review on history, controversy, traditional use, ethnobotany, phytochemistry and pharmacology of *Artemisia absinthium* linn, *International Journal of Advanced Research in Engineering and Applied Sciences*, **2015**, **4** (5), 77;
72. Szopa, A., Pajor, J., Klin, P., Rzepiela, A., Elansary, H.O., Al-Mana, F.A., Mattar, M.A., Ekiert, H.: *Artemisia absinthium* - Importance in the History of Medicine, the Latest Advances in Phytochemistry and Therapeutical, Cosmetological and Culinary Uses, *Plants,* **2020**, **9** (9), 1-33;
73. Langa, E., Pardo, J.I., Giménez-Rota, C., González-Coloma, A., Hernáiz, M.J., Mainar, A.M.: Supercritical Anti-Solvent Fractionation of *Artemisia absinthium* L. Conventional Extracts: Tracking Artemetin and Casticin, *Journal of Supercritical Fluids*, **2019**, **151**, 15-23;
74. Chan, E.W.C., Wong, S.K., Chan, H.T.: Casticin from Vitex Species: A Short Review on Its Anticancer and Anti-Inflammatory Properties, *Journal of Integrative Medicine*, **2018**, **16** (3), 147-152;
75. Nguyen, H.T., Németh, Z.É.: Sources of Variability of Wormwood (*Artemisia absinthium L.*) Essential Oil, *Journal of Applied Research on Medicinal and Aromatic Plants*, **2016**, **3** (4), 143-150;
76. Al-Malki, A.L.: Shikimic Acid from *Artemisia Absinthium* Inhibits Protein Glycation in Diabetic Rats*, International Journal of Biological Macromolecules*, **2019**, **122**, 1212-1216;
77. Liu, T., Wu, H., Wu, H., Zhang, J.: Wormwood (*Artemisia absinthium* L.) as a Promising Nematicidal and Antifungal Agent: Chemical Composition, Comparison of Extraction Techniques and Bioassay-Guided Isolation, *Industrial Crops and Products*, **2019**, **133**, 295-303;
78. Nalbantsoy, A., Erel S.B., Köksal C., Göçmen B., Yıldız M.Z., Yavaşoğlu, N.U.K.. Viper venom induced inflammation with *Montivipera xanthina* (Gray, 1849) and the anti-snake venom activities of *Artemisia absinthium* L. in rat. *Toxicon*, **2013**, **65**, 34-40;
79. Gambelunghe, C., Melai, P.: Absinthe: Enjoying a New Popularity among Young People?, *Forensic Science International*, **2002**, **130**, 183-186;
80. Bączek, K.B., Kosakowska, O., Przybył, J.L., Pióro-Jabrucka, E., Costa, R., Mondello, L., Gniewosz, M., Synowiec, A., Węglarz, Z.: Antibacterial and Antioxidant Activity of Essential Oils and Extracts from Costmary (*Tanacetum balsamita* L.) and Tansy (*Tanacetum vulgare* L.), *Industrial Crops and Products*, **2017**, **102**, 154-163;
81. Wolf, V.C., Gassmann, A., Clasen, B.M., Smith, A.G., Müller, C.: Genetic and Chemical Variation of *Tanacetum vulgare* in Plants of Native and Invasive Origin, Biological Control, **2012**, **61** (3), 240-245;
82. Heinrich, M.: Herbal Drugs and Phytomedicines. A Handbook for Practice on a Scientific Basis, *Journal of Ethnopharmacology*, **2004**, **94** (2), 353;
83. Móricz, Á.M., Häbe, T.T., Böszörményi, A., Ott, P.G., Morlock, G.E.: Tracking and Identification of Antibacterial Components in the Essential Oil of *Tanacetum Vulgare* L. by the Combination of High-Performance Thin-Layer Chromatography with Direct Bioautography and Mass Spectrometry, *Journal of Chromatography A*, **2015**, **1422**, 310-317;
84. Devrnja, N., Anđelković, B., Aranđelović, S., Radulović, S., Soković, M., Krstić-Milošević, D., Ristić, M., Ćalić, D.: Comparative Studies on the Antimicrobial and Cytotoxic Activities of *Tanacetum Vulgare* L. Essential Oil and Methanol Extracts, *South African Journal of Botany*, **2017**, **111**, 212-221;
85. Lahlou, S., Tahraoui, A., Israili, Z., Lyoussi, B.: Diuretic Activity of the Aqueous Extracts of *Carum Carvi* and *Tanacetum Vulgare* in Normal Rats, *Journal of Ethnopharmacology*, **2007**, **110** (3), 458-463;
86. Xie, G., Schepetkin, I.A., Quinn, M.T.: Immunomodulatory Activity of Acidic Polysaccharides Isolated from *Tanacetum Vulgare* L., *International Immunopharmacology*, **2007**, **7** (13), 1639-1650.