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Review

Review on Main Active Substances and Functions in *Jasminum Sambac* (L.) Aiton

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Abstract: This article reviewed the relevant literature on the main active substances and functions of jasmine (*Jasminum sambac* (L.) Aiton). The results showed that: 1. The main active substances in jasmine are volatile oil, polysaccharides, and flavonoids. Volatile oil is a mixture of large molecules; Polysaccharide is a type of heteropolysaccharide or sugar complex; Flavonoids mostly exist in the form of glycosides and have multiple monomers. 2. Jasmine flower has various functional activities such as antioxidant, antibacterial, anti-tumor, anti-inflammatory, etc., which are related to active substances such as flavonoids, polysaccharides, and volatile oil. 3. The active function of jasmine is closely related to the advanced structure and certain chemical components of the active substances. The article aims to provide the theoretical and necessary basis for further exploration of active substances in jasmine flowers and the development of jasmine new products.

Keywords: *Jasminum Sambac*, Active Substance, Function, Research Progress

Introduction

Jasminum sambac (*L.*) Aiton, also known as jasmine, tea flower, leafy flower, etc., is an evergreen upright or climbing shrub plant in the *Oleaceae* family and the Jasmine genus. Its branches are cylindrical or slightly flattened, sometimes hollow and sparsely fluffy. It has been cultivated in China for over 2000 years now (Leng and Tang, 2018). Jasmine is warm and humid in nature, afraid of cold, and not resistant to frost. It is mostly planted in southern provinces of China, including Jiangsu, Fujian, Guangxi, Sichuan, Yunnan, etc. Among them, Fuzhou in Fujian and Hengzhou in Guangxi are the main production and processing bases for jasmine in China (Xiao *et al*., 2021; Wu *et al*., 2020a). Jasmine tea is considered an iconic product of China both domestically and internationally and is widely praised by consumers for its excellent quality. Jasmine flowers have a longer flowering period, lasting from May to August, and a relatively short fruiting period, lasting from July to September. The "Supplement to the Compendium of Materia Medica" (Zhao, 2007) records that jasmine has a light fragrance and has the effect of calming emotions and relieving depression. In recent years, a large number of studies have further confirmed that active substances such as flavonoids and polysaccharides present in jasmine have high medicinal value, which can be used to improve sleep quality, resist aging, alleviate anxiety, etc. (Kuang *et al*., 2011; Li *et al*., 2019; Zou *et al*., 2016; Mohamad *et al*., 2021). Research has shown that there are various active substances in jasmine, such as volatile oils, flavonoids, and polysaccharides. However, scholars mainly focus on the extraction and analysis of active substances, as well as the evaluation of active functions. However, there is little research on the principles, structure-activity relationships, and interaction relationships between the active substances in jasmine that exert their specific functions. This article provided a systematic review of the main active substances and functions in jasmine plants and preliminary speculated and analyzed the mechanism of jasmine active functions. This article aims to provide a necessary theoretical basis for further exploration of active substances in jasmine and the development of related innovative products.

Main Active Substances in Jasmine

The main active substances and main components of jasmine are shown in Fig. 1. The structural formula listed in Fig. 1 is a specific substance in this category, such as benzyl alcohol, which belongs to the volatile oil alcohols category. Its existence can support the existence of alcohol in volatile oil.

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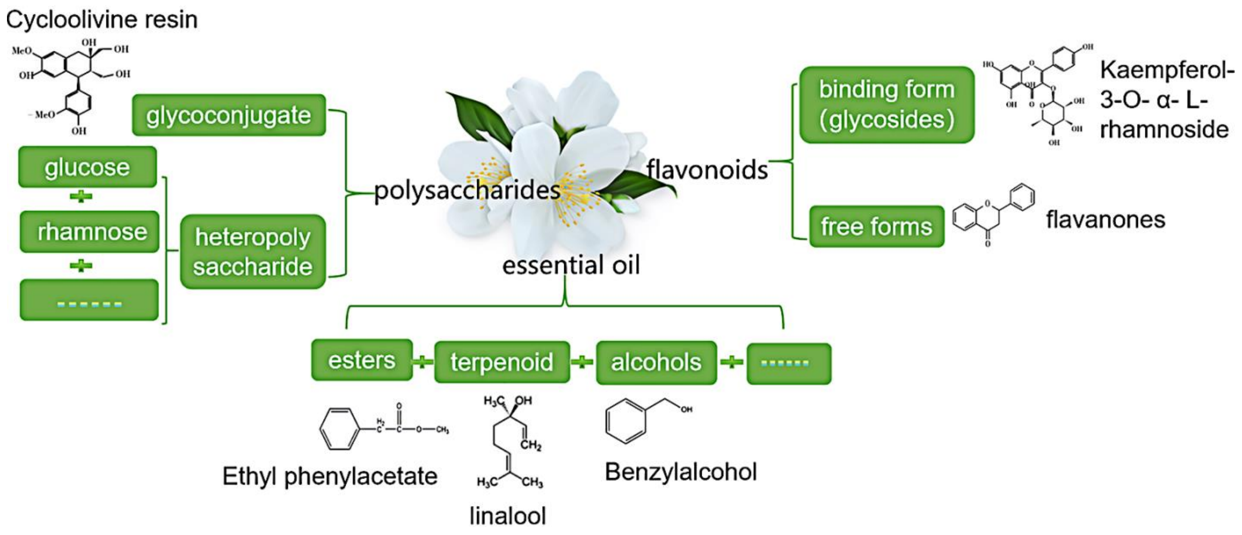

Fig. 1: The main active substances in Jasmine

Table 1: Extraction technology and advantages and disadvantages of jasmine flower volatile oil

Extraction technology	Advantages	Disadvantages	Reference
Steam distillation method (HD)	Simple equipment; Low cost; Pollution-free	Long extraction time; and Essential oil thermal decomposition and hydrolysis; There is a possibility of coking	Yu *et al*. (2019)
Organic solvent extraction	High yield of essential oils, simple equipment and low cost	There are many impurities in essential oils; It is prone to residual toxic components; Low extraction efficiency	Ye *et al*. (2014)
Simultaneous Distillation and Extraction (SDE)	High extraction efficiency of trace components	High-temperature distillation, distorted aroma of essential oils	Liu *et al*. (2007)
Supercritical CO_2 fluid extraction	CO_2 is cheap and easy to obtain; Nontoxic side effects, completely "green"; Operational safety	The quantity of equipment is large and expensive; CO_2 can damage the structure of essential oils	Yu *et al*. (2019)
Subcritical Fluid Extraction (SFE)	Use green solvents; High purity and pollution-free essential oils; Low energy consumption	The equipment technology is complex; Shrinkage or volatilization during the recovery process, reducing extraction efficiency	Ye *et al*. (2016)
Molecular distillation	Can separate natural materials with high boiling point, high viscosity, and thermal sensitivity; High separation, non-toxic and pollution-free	equipment costs and high requirements for sealing; Difficulty in equipment processing	Yang (2021)
Enzymatic assisted steam distillation	Environmental protection, economic safety; Significant improvement in yield and quality of essential oils	Long time consuming; High requirements for experimental personnel	Meng *et al*. (2023); Nurshazana *et al*. (2019)

Figure 1, the active substances of jasmine mainly include volatile oils, polysaccharides, and flavonoids. The main volatile oils in jasmine are geraniol, jasmone, and linalool. The polysaccharides in jasmine have been identified to be macromolecular polysaccharides and glycosides. The flavonoids mostly bind with sugars and exist as glycosides. The monomers of flavonoids include quercitrin and iso-quercitrin.

Volatile Oils

Extraction Technology and Component Analysis of Volatile Oil

According to research, jasmine volatile oil has received widespread attention due to its excellent aroma, and antibacterial, and antioxidant properties (Yu *et al*., 2019). The volatile oils of jasmine extracted from different varieties, producing areas, developing stages, or methods differ in terms of chemical components and concentrations. The extracting methods of volatile oil are summarized in Table 1.

Recently, the jasmine volatile oil extraction techniques have progressively developed in the direction of economics, efficiency, greenness, and environmental protection. At present, the main extraction techniques for volatile oil from jasmine flowers include Simultaneous Distillation Extraction (SDE), organic solvent extraction, adsorption, supercritical CO_2 extraction, Subcritical Fluid Extraction (SFE), and enzymatic hydrolysis-assisted steam distillation extraction.

From Table 1, it can be seen that traditional methods for extracting volatile oil from jasmine mainly include

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Steam Distillation (SD) and organic solvent extraction. At present, the more advanced extraction methods include Simultaneous Distillation Extraction (SDE), supercritical CO_2 fluid extraction, Subcritical Fluid Extraction (SFE), molecular distillation, and enzymatic hydrolysis-assisted steam distillation. The steam distillation method, which has simple equipment, and low cost, but single technology, is still the most commonly used volatile oil extraction technology at present. However, confirmed that combining Subcritical Fluid Extraction (SFE) with supercritical CO_2 fluid extraction can significantly improve the extraction efficiency of plant volatile oil. This can provide new clues for the extraction of jasmine essential oil and joint extraction methods can be adopted to improve the extraction efficiency of jasmine essential oil, which is conducive to the industrial extraction and production of plant essential oil in the future.

The chemical components of the volatile oils extracted from Jasmin are very complex. Experiments confirmed that the volatile oils in jasmine mainly include benzyl acetate, linalyl acetate, benzyl benzoate, methyl 2-aminobenzoate, 3-hexenyl-1-benzoate, linalool, phenyl methanol and cis-3-hexen-1-ol (Liu *et al*., 2023; Sun, 2022; Li *et al*., 2020; Wang *et al*., 2021). These macromolecular compounds are mainly composed of esters, alcohols, and terpenoids (Liu *et al*., 2023; Sun and Xia, 2020). The aroma of jasmine mainly originates from linalool, benzyl acetate, methyl 2-aminobenzoate, phenylmethanol, and α-farnesene (Li *et al*., 2020; Zhang *et al*., 2022; Wang, 2022). The net oils of jasmine mainly contain α-farnesene, linalool, benzyl acetate, and geranylgeraniol (Li, 2021; Ye *et al*., 2021). Specifically, geranylgeraniol is obviously different from the fragrant components and volatile oils of jasmine and has various excellent activities, such as anti-tumor, antibacterial, and brain-protecting abilities (Wu *et al*., 2018). It is a key intermediate in the production of spicery, drugs, and lipid-soluble vitamins A and C. However, there is no study on geranylgeraniol in jasmine.

The Effect of Volatile Oil on the Quality of Jasmine Tea

The concentrations of some fragrant components in Jasmine significantly affect the quality of jasmine tea. Chen *et al*. (2021) designed an XFJTF index which is positively correlated with the XFJTF index, the equation was as follows:

- XFJTF index = [(cis-3-hexenyl benzoate + indole + methyl-2-aminobenzoate)concentration/(linalool+cis-3-hexenyl acetate+benzyl acetate) concentration×100]
- The XFJTF index is a more effective method for jasmine tea quality evaluation and the score of XFJTF is proportional to the tea quality

The traditional method of producing scented tea is to use fresh flowers to impart external fragrance to different tea bodies. The so-called tea body refers to the raw tea used to flavor various types of scented tea. Except for a small amount of black tea and oolong tea, it is mainly green tea, with roasted green tea being the most common. During the production process, it is common to shorten the aroma retention time of tea leaves due to the short retention period of floral aroma substances and the loss of some aroma substances due to their volatility, resulting in a poor aroma retention effect. Based on this defect, auxiliary materials with high aroma and strong aroma permeability can be used in the production of scented tea, or special methods can be used to reduce the escape of aroma substances to assist in aroma enhancement. Previous studies have confirmed that the use of highly flavored pomelo flowers (Chen *et al*., 2019) mixed with jasmine flowers to enhance the aroma of tea leaves or the use of casein embedding (Xu, 2021) jasmine essential oil to enhance the aroma of tea leaves can effectively improve their scenting effect and improve the quality of jasmine tea.

The above research indicated that both the auxiliary flavoring method and the embedding jasmine essential oil flavoring method can effectively improve the aroma quality of jasmine tea. The auxiliary flavoring method should fully consider the characteristics of jasmine flowers when selecting auxiliary materials. The amount of auxiliary materials should follow the principle of not covering up the original taste of jasmine tea and should be added in an appropriate amount. The addition of auxiliary materials should not have adverse effects on jasmine and the purpose of auxiliary materials should be to improve the absorption of jasmine aroma by tea leaves. The embedding jasmine essential oil flavoring method can reduce the loss of aroma substances and prolong the aroma imparting time of tea leaves. However, this method is more complex than traditional processes and some issues including the embedding rate of casein on essential oils and the loss of oils during the embedding process should be considered. Therefore, further exploration can be conducted on this basis in the future.

Polysaccharides

Polysaccharides are complex and highly molecular-weight carbohydrate substances formed by the condensation and dehydration of multiple monosaccharide molecules. Many researches have proved that plant polysaccharides have many excellent activities, such as anticancer (Yang *et al*., 2019a), antioxidant (Yang *et al*., 2019b), antibacterial, and *in vitro* anti-inflammatory (Otunola and Afolayan, 2018). Jasmine polysaccharides are one of the main active substances in jasmine, with various excellent effects such as immunity, anti-inflammatory and antibacterial (Huang *et al*., 2022; Wang, 2003; Li *et al*., 2019 Li, 2019; Zou *et al*., 2016). Crude polysaccharides of jasmine are mainly glycoconjugates that contain abundant amino acids and trace metals (Zhu *et al*., 2007). The purified jasmine polysaccharides consist of various monosaccharides including glucose, rhamnose, and mannose, except galactose and arabinose. The sugar connecting way is the β-glucosidic bond (Liu *et al*., 2009).

Jasmine contains cell wall components and pectin polysaccharides with immune function (Wu *et al*., 2020b; 2022). Huang *et al.* (2022) modified the water extraction and alcohol precipitation method to extract pectin-typed polysaccharides from jasmine dregs. After purification with the Sevage method, two types of homogeneous acidic polysaccharides were obtained, which had relative weight-average molecular weights of 15.48 kDa and 44.75 kDa, hyaluronic acid concentrations of 51.25±2.53% and 77.43±3.12% and protein contents of 0.84±0.09% and 0.89±0.08%, respectively. The two types of homogeneous acidic polysaccharides were shown good immune effects on the proliferation rate and phagocytic rate of mouse macrophages. The discovery of jasmine pectin-type polysaccharides provides a new feasibility for the utilization of jasmine dregs (Liu *et al*., 2009). However, only the structural characteristics and immune effects of jasmine polysaccharides, and further research on the structure-activity relationship and functional connections between the two has not been addressed.

The polysaccharides in jasmine can not only form bioactive macromolecular heteropolysaccharides composed of monosaccharide groups but also form sugar complexes through glycosidic bonds with other non-sugar substances. Liu *et al*. (2004); Zhang *et al*. (1995) used spectrography to isolate and identify the monomers of glycosides to be oligomeric cycloreversed iridoid glucosides, including molihuasides A-E and *sambacoside* A and E. The structures of the monomers of glycosides in jasmine are shown in Fig. 2 (Liu *et al*., 2004).

Flavonoids

Flavonoids are polyphenols with various biological activities in plant secondary metabolism, widely distributed in various parts of the plant body. Some researchers have confirmed that flavonoids have a wide range of active functions, including alleviating aluminum phosphide-induced anemia in rats (Afolabi *et al*., 2019), enhancing the antioxidant status of the ovaries; antibacterial and antioxidant activities (Wang *et al*., 2019; Zhang *et al*., 2021), etc.

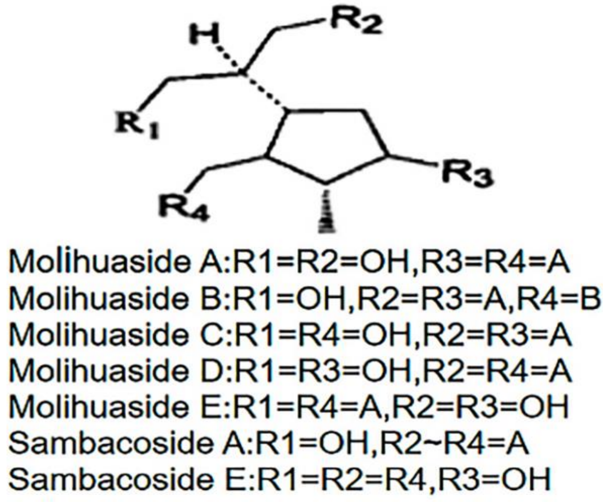

Fig. 2: Structure of jasmonate monomer compounds

Most flavonoids in jasmine flowers combine with sugars to form glycosides, with only a small portion of flavonoids being free. The flavonoids from the buds of jasmine were isolated via spectrograph method and identified to be benzyl-O-β-D-glucopyranoside and benzyl-O-β-D-xylopyranosyl-(1→6)-β-D-glucopyranoside (Liu *et al*., 2004). The flavonoids of jasmine have huge molecular weights and complex structures. Recently, some researchers studied their structures and separated and identified some of their monomers using relevant techniques, including quercitrin, iso-quercitrin, quercetin-3-O-α-L-rhamnoside, kaempferol-3-O-α-L-rhamnoside, quercetin-3-β-robinoside, kaempferol-3-β-robinoside, rutin, nicotiflorin, quercetin-3-O-(2,6-α-L-dipyranrhamnosyl)-β-D-pyrangalactoside and mauritianin (Lin *et al*., 2016). The structures of flavonoids in jasmine are shown in Fig. 3 (Tang *et al*., 2021).

The flavonoids in jasmine were proven as efficient active free radical scavengers and their clearance rates were positively correlated with concentrations. Du *et al*. (2021) used five methods (water extraction, alcohol extraction, microwave, ultrasonic wave, ultrasound-assisted green eutectic solvent) to extract flavonoids from jasmine. The extraction efficiency of ultrasound-assisted eutectic solvent was far higher than the other four methods. The extraction efficiency ranked as ultrasonic wave > microwave > alcohol extraction > water extraction. In all, the joint action between eutectic solvent and ultrasonic wave in flavonoid extraction from jasmine is more efficient and offers some technical clues for the extraction of other plant-derived active substances.

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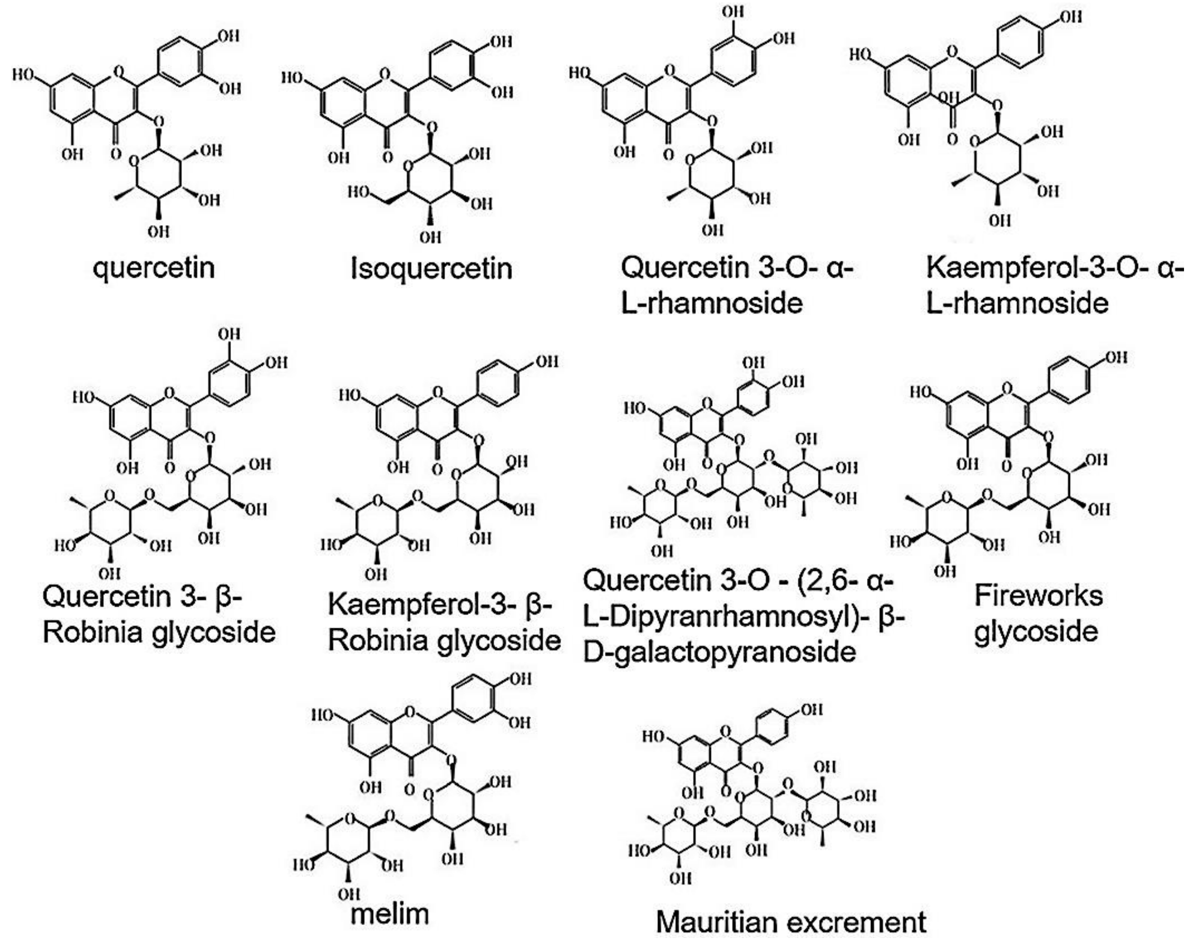

Fig. 3: Structure of main flavonoid monomers in jasmine

Table 2: Main active substances from root, stem, and leaf of *Jasminum sambac*

Jasmine	The main active substances	Reference
	Flavonoids, steroids	Jia (2020); Zhang *et al*. (2012)
	Fatty acid, fatty alcohols (volatile oils)	Zhang *et al*. (2012)
	Lignin	Zhang *et al*. (2012); Zheng (2021)
Jasmine root	Terpenoids	Zhang *et al*. (2012); Kurbanjiang *et al*. (2008)
	alkaloid	Kurbanjiang *et al*. (2008); Lv *et al*. (2013)
	Glycosides, hesperidin, and neo hesperidin (glycosides)	Liang *et al*. (2020)
	Jasmin A-D	Zeng *et al*. (2012)
Jasmine stems	Polysaccharides	Lv *et al*. (2018)
	Flavonoids	Liang *et al*. (2017)
Jasmine leaves	Flavonoids	Lv *et al*. (2018)
	May also contain phenols, volatile oil, saccharides, and glycosides, Organic acid, alkaloids	Su *et al*. (2013)

Active Substances from Root, Stem and Leaf of Jasminum Sambac

Recent research showed that the roots of jasmine contain some active substances, such as flavonoids, saccharides, volatile oils, lignin, and terpenoids (as shown in Table 2). In comparison, the active components in the stems and leaves of jasmine are less studied. Nevertheless, flavonoids and saccharides are detected in the stems of jasmine. So far, only flavonoids have been detected in the leaves of jasmine. The stems and leaves of jasmine may contain other active substances, such as phenols and alkaloids. Thus, further exploration is needed (Su *et al*., 2013). The flavonoids and saccharides are the typical active substances in the roots, stems, and leaves of jasmine, which are conducive to the further development and utilization of jasmine.

Table 3: Active functions of Jasmine and mechanism analysis

Efficacy	Active substance	Method	Mechanism analysis
Immunity models	Pectin-type polysaccharides	Establishment of mouse macrophage (Huang *et al*., 2022)	Jasmine pectin polysaccharides can significantly increase the production of pro-inflammatory factor ROS and NO It is speculated that jasmine polysaccharides can participate in immune responses by activating macrophages, promoting The TLR4/Akt/MAPK/NF-kB pro-inflammatory signaling pathway and regulating the secretion of various pro-inflammatory cytokines. In addition, research has shown that the immune function of plants can also be regulated by the environment (Saijo *et al*., 2019), which may provide a new direction for the mechanism of immune activity of jasmine flowers
Anti-inflammatory	Crude polysaccharides	Establishment of a mouse model of inflammation (xylene-induced ear swelling) (Wang, 2003)	Jasmine crude polysaccharide has significant anti-inflammatory activity. Based on the mechanism of action of Tremella fuciformis polysaccharides (Xu *et al*., 2023), it can be inferred that jasmine crude polysaccharide may also have anti-inflammatory effects by inhibiting the pro-inflammatory signaling pathway, stimulating the production of anti-inflammatory factors by cells and inhibiting their production of pro-inflammatory factors. The anti-inflammatory activity of jasmine has potential application value for the development of natural anti-inflammatory drugs
Wound healing	Jasmine pressed filter extract	Evaluation of the effect of jasmine extract on fibroblast viability by resazurin reduction (Eakwaropas *et al*., 2019)	The main active substance in plants of the genus Baiji, Baiji polysaccharide BSP (a water-soluble heteropolysaccharide composed of D-mannose and D-glucose), has been proved to have a good effect on wound healing through anti-inflammatory and antibacterial effects (Zhang *et al*., 2023). The mechanism is that the BSP can induce the growth of Vascular endothelial cells and growth factors inhibit the activation of pro-inflammatory cytokines and activate macrophages through the BSP receptor on the cell membrane surface, reducing the infiltration of inflammatory cells into wounds. Interestingly, the structure of jasmine Polysaccharides are similar to BSP. Therefore, based on the wound healing mechanism of Baiji polysaccharides, the effect of promoting wound healing of jasmine Polysaccharides can be explained
Antibacterial	Methanol extract (flavonoids)	Paper diffusion method (Kirby Bauer) (Humberto *et al*., 2020)	Active substances in Jasmine have significant antibacterial activity. The essential oils in Jasmine can effectively inhibit the formation of bacterial biofilm. It can be speculated that the active substances of jasmine may directly act on the cell wall and membrane of bacteria, changing their permeability, damaging their integrity, hindering their normal metabolism and inhibiting the formation of biofilms, that gradually disrupts the structure of bacteria, thereby affecting their normal growth and achieving antibacterial effects
	Essential oil	Treatment of the biofilm of cariogenic bacteria cultured on a polyethylene plate for 24 h with a mouthwash containing jasmine essential oil (Thaweboon and Thaweboon, 2018)	
	Jasmine is a non-volatile component	Drug-sensitive paper method (Xie *et al*., 2022)	
Improves sleep	Essential oil	Pittsburgh sleep quality index (Kuang *et al*., 2011) To compare changes in sleep quality before and after use of jasmine volatile oil	Essential oil in Jasmine can improve sleep quality. The mechanisms may be related to the active substances contained in it, such as linalool. It is found that the active components of Sugemule-4 essential oil (including linalool) act on multiple targets and regulate multiple pathways to produce sleep aid effects (Yang *et al*., 2022). Therefore, this may provide some insights for the study of the mechanism by which jasmine essential oil can improve sleep quality
Relieves anxiety	Essential oil	Blood cortisol levels before and after inhalation of jasmine essential oil are measured in patients undergoing open surgery (Mohamad *et al*., 2021)	Jasmine essential oil can effectively reduce anxiety in patients undergoing open surgery. The reason may be that the essential oil of jasmine contains active substances such as benzyl benzoate, which can act on the adrenal gland and regulate the secretion of adrenaline by blood cortisol content. Research has confirmed that benzyl benzoate is the main anti-anxiety ingredient and it has been inferred that it may alleviate anxiety through two major systems: 5-Hydroxytryptamine (5-HT) and mitogen-activated protein kinase (MAPK) signaling pathways (Zhang, 2019). This may have a certain role in the study of the mechanism of Jasmine essential oil alleviates anxiety and is of great significance for further improving the success of open surgery
Mite removal	Essential oil	Through greenhouse investigation, the acaricidal activity of jasmine essential oil was studied (Saad *et al*., 2021)	Jasmine essential oil has stronger mite-killing activity than mustard and lavender can effectively kill the two spotted mites. It has been confirmed that the pure oil of double Petal jasmine contains effective components such as eugenol (Liu *et al*., 2023). It is found that the acaricidal mechanism of eugenol is closely related to the drug phosphorylation, cholinergic synapses, and oxidative

Table 3: Continue

			phosphorylation (Li, 2021). Therefore, it is speculated that the pathway of jasmine essential oil in killing mites may be similar to it. This has potential guiding significance for the development of new ecologically friendly acaricides to replace chemically synthesized acaricides
Antioxidant, anti-aging	Essential oil	*In vitro* antioxidant experiments to determine their scavenging ability against DPPH radicals, hydroxyl radicals, superoxide anions, and ABTS (Li *et al*., 2019) *in vitro* antioxidant experiments and non-enzymatic glycosylation tests (Li *et al*., 2019). Calculate the half-inhibition concentration (IC_{50}) to evaluate the free radical scavenging efficiency of jasmine volatile oil (Zou *et al*., 2016)	Jasmine essential oil has strong antioxidant properties on the Fe^{3+} oxidation system and can effectively eliminate the free radicals O^{2-}, ·OH and DPPH. It's antioxidant and anti-aging effects may be related to the active substances contained in them, such as benzyl alcohol and linalool. Therefore, jasmine essential oil can be used as a substitute for chemical antioxidants, effectively repairing the problem of excessive oxidation *in vivo*. It has important reference value for the research and development of skincare products, cosmetics, health food, and other related products

Active Functions of Jasmine

The flowers, leaves, and roots of jasmine can all be used as medical resources in China and also can be used to extract jasmine extract and essential oils. The existing research confirmed that jasmine has many active functions, including immune, anti-inflammatory, wound-healing, antibacterial, sleep-improving, anxiety-relieving, mite-killing, anti-oxidation, anti-aging, and so on. These functions were proved to be related to the active substances in jasmine. The relative mechanism analysis was inferred in Table 3.

In Table 3, it can be inferred that the active functions of jasmine are closely related to its active substances and components. Benzyl benzoate in jasmine essential oil can regulate the secretion of cortisol by the adrenal gland to maintain a low level, acting on the adrenal gland through a certain signaling pathway, which can alleviate anxiety. Linalool in essential oil may act on multiple target organs and exert its hypnotic effect through various pathways. Jasmine polysaccharides can regulate the secretion of pro-inflammatory cytokines by promoting or inhibiting pro-inflammatory signaling pathways, enabling jasmine to exhibit immune, anti-inflammatory, and wound healing effects.

In addition, researchers have found that the roots, stems, and leaves of jasmine also have active functions. Jasmine root has analgesic and anesthetic effects (Jia 2020; Zhang, 2018); The polysaccharides in the roots and stems of jasmine and the alkaloids in the leaves of jasmine all exhibit antioxidant activity (Zhou *et al*., 2013, Lv *et al*., 2018; Liu *et al*., 2017). Nonvolatile components such as polysaccharides, flavonoids, alkaloids, and saponins in jasmine leaves have strong antibacterial effects on 8 common pathogenic bacteria, including *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Bacillus subtilis* (Gowdhami *et al*., 2015). Jasmine leaf ethanol extract has a high wound contraction rate in albino rats and can effectively promote wound healing (Anima *et al*., 2019). In summary, all parts of jasmine have high active functions, but currently, there is relatively little research on them and there have been no reports on the interactions between active substances in jasmine. Therefore, further explorations into the petals, roots, stems and leaves of jasmine should be needed for the development and utilization of jasmine.

Conclusion

This article reviewed the composition, structure, and active functions of the main active substances in jasmine based on the existing research on jasmine. The following conclusions are drawn: (1) Volatile oil is a key macro-molecular substance. The content of some components in the essential oil can be used to determine the quality of jasmine tea; (2) Jasmine polysaccharides can be synthesized from monosaccharides such as glucose and rhamnose β-Glycoside bonds connect to form heteropolysaccharides and can also combine with other non-sugar substances to form sugar complexes through glycosidic bonds; (3) Flavonoids mostly exist in the form of glycosides, with a small portion in the free state; (4) The active functions of jasmine, including immune, anti-inflammatory, wound-healing, antibacterial, sleep-improving, anxiety-relieving, mite-killing, anti-oxidation, anti-aging, are closely related to active substances in jasmine. They can regulate enzyme activity, inhibit gene expression in the action pathway, and activate immune cells, especially macrophages and T lymphocytes to exert their effects. This study can provide the theoretical and necessary basis for further exploration of jasmine.

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Author's Contributions

Jiaqi Jian and Yang Liu: Participated in the written and interpretation.

Keying Han: Participated in the written.

Qiwei Guo and Xiyue Yu: Participated in the references collection.

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