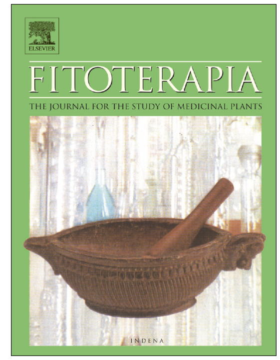

Genus Alangium – A review on its traditional uses, phytochemistry and pharmacological activities

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Genus *Alangium* – a review on its traditional uses, phytochemistry and pharmacological activities

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ABSTRACT:

The species from *Alangium* have been used as folk medicine to treat rheumatism, skin diseases, diabetes by the people of Southeast Asia. Previous phytochemical studies have shown this genus are rich sources of alkaloids, glycosides, and terpenoids, which have attracted considerable attention of many researchers due to their markedly diverse and complex architecture. The crude extracts as well as the monomeric compounds from the title genus possess anti-tumor, anti-inflammatory, antibacterial, anti-oxidant pharmacological activities. Besides, some isolates from *Alangium* exhibited the effects on skeletal, smooth muscle and the nervous system. As a large genus of medicinal plants, the medicinal value of *Alangium* has been widely reported, but there is no review that provide a systematic summary towards its chemical constituents and pharmacological activities, to our knowledge. This work aims to present a comprehensive overview on the traditional uses, phytochemistry, and pharmacological activities of medicinal plants in the genus *Alangium*, and to explore the evidence supporting its ethnopharmacological effectiveness.

KEYWORDS: *Alangium*; Review; Traditional uses; Phytochemistry; Pharmacological activities.

INTRODUCTION

The genus *Alangium* belongs to the Alangiaceae family and comprises about 30 species, which were mainly distributed in tropical regions [1]. Among of them, near nine species grow in China [1]. Some species from *Alangium*, including *A. chinense*, *A. platanifolium*, *A. lamarckii*, *A. salviifolium* and *A. kurzii*, have traditionally been used as folk medicine to treat rheumatism, skin diseases, diabetes by the people of southwest China, Thailand, Philippines, and India [2-5]. As a large genus of medicinal plants, previously phytochemical studies have identified more than 300 alkaloids, glycosides, terpenoids, and other compounds from different species of *Alangium*. In particular, a large number of novel and high modified molecular skeleton recently been reported. The structures of genus *Alangium* have attracted more and more attention from pharmacists and phytochemists. Besides, the reported *in vivo* and *vitro* experiments have demonstrated that the crude extracts and the monomeric compounds of the title genus exhibited diverse biological activities, such as anti-tumor, anti-inflammatory, antibacterial, anti-oxidant, as well as the effects on smooth muscle and the nervous system. Herein, the comprehensive review on ethno-medicinal uses, phytochemistry, pharmacological activities of the genus *Alangium* were presented, which may shed a light on its further research.

TRADITIONAL MEDICINAL USES

Alangium species have a long history as traditional remedies in China, India, Philippines, and Thailand. The roots, flowers, and leaves of *A. chinense* have been served as ethnomedicinal treatments for rheumatic arthritis, acroanesthesia, and fractures in China [6]. In addition, the roots of *A. platanifolium* was used as alternative of *A. chinense* to treat rheumatic arthritis [4, 7]. The roots of *A. kurzii* have historically been used as traditional medicine for the treatment of rheumatic arthritis, paralysis, cardianeuria, hemorrhoids, and acroanesthesia by the local people of China [3]. The barks of *A. lamarckii* also extensively used in folk medicine as an anthelmintic, purgative, emetic, febrifuge in India [8]. The different parts of *A. salviifolium* are used for a wide range of diseases [9-13]. For example, its root barks are antidote for several poisons, fruits are used to treat haemorrhage, constipation and burning sensation, while its leaves are used to cure rheumatism and asthma [9, 13, 14]. In Thailand, its wood was used as tonic and treatment of hemorrhoid [15]. In Malayalies, *A. salviifolium* has been reported for the treatment to sexual diseases, and as contraceptives for pigs and cattle rearing [10, 16].

PHYTOCHEMISTRY

Alkaloids. Alkaloids are widely distributed in the genus *Alangium*. To date, at least 107 alkaloids and nitrogen-containing heterocycles have been isolated from this genus (Figure 1) (Table 1). The most of the isolated alkaloids of *Alangium* were isoquinolines, which have been reported more than 50 compounds from various species (**17-37, 39-57, 60-65, 67-71, 73-74, 79-86, 88-90, 93-97, 99-104**). Notably, biological evaluation showed that 10-*O*-demethylcephaeline (**61**) exhibited potent cytotoxic activity against human lung carcinoma (A549) and breast adenocarcinoma (MCF-7) with ED_{50} values of 0.013 and 0.062 μM, respectively, the stereoisomer **60** was less potent than **61**, and related compounds with different hydroxy/methoxy substitution patterns were also less potent or inactive [17]. Aanabasine (**1**) is a pyridine derivative with piperidine substituted at *β* orientation isolated from *A. chinense* [18], then subsequent investigations have led to the isolation of seven anabasine hybrids alkaloids (**2-5**,**14-16**) from the roots and fiber roots of *A. chinense* [19, 20]. Besides, genus *Alangium* possesses alkaloid with carboline, indole, and oxindole scaffolds. Two carboline alkaloids namely alangiobussine (**58**) and alangiobussinine (**59**) were isolated from the leaves of *A.*

bussyanum [21]. Bioassay-guided fractionation of an extract prepared from *A. javanicum* led to the isolation of a novel DNA cleavage agent javaniside (**66**), which had an unusual oxindole skeleton [22]. In addition, the rare sesquiterpenoid alkaloids **76** and **77** were isolated from *A. alpinum* [23]. It was noteworthy that alangiumkaloids A and B (**73** and **74**) with the unique skeleton of protoberberine were isolated from *A. salviifolium*, which possibly derived from demethylalangiside (**64**) [24].

Glycosides. A total of 166 glycosides compounds have been isolated from genus *Alangium* (Figure 1) (Table 1). Previous studies showed phenol glycosides (**108-172**) as their main components with diverse activities [25]. Among them, salicin (**116**) widely occurs in *A. chinense*, *A. plantanifolium* as well as *A. salviifolium* [2, 26, 27], and the glycoside compounds represented by salicin (**116**) showed antipyretic and analgesic effects, used for treating fever and arthritis [25]. More than 30 megastigmane glycosides (**173-206**) have been isolated from the leaves of *A. platanifolium* and *A. premnifolium*, as well as the roots of *A. chinense* [2, 6, 28-34]. Moreover, near 23 lignan glycosides (**207-225, 227-230**) have been isolated from *A. kurzii*, *A. alpinum*, *A. chinense* and *A. premnifolium*, *A. platanifolium* as far as our knowledge [2, 3, 23, 35, 36]. In addition, about 44 other glycosides have previously been reported from genus *Alangium* .

Terpenoids. As one of the most diverse types of natural products, terpenoids have been reported various activities such as anti-cancer, anti-inflammatory, anti-allergic and hypoglycemic [37]. Genus *Alangium* contain different classes of terpenoids such as sesquiterpenes (**274-306**, **309**), megastigmane monoterpenes (**324-338**), norditerpenoids (**307, 308**) and oleanane-type triterpenoids (**316-319**), lupane-type triterpenoid (**312**, **323**), as well as triterpene caffeates (**314**, **315**) [2, 6, 19, 23, 24, 38-44] (Figure 1) (Table 1). Interestingly, the novel cadinane-type sesquiterpenoid, (−)-7, 8-dihydroxycalamenal (**298**) was isolated from *A. salviifolium*, which exhibited more potent antioxidant activity than dibutylhydroxytoluene (BHT), and showed highly potent inhibition against the enzyme tyrosinase [38].

Other compounds. To data, about 21 other compounds, along with myristic, palmitic, oleic, linoleic acids, and myricyl alcohol have been reported from genus *Alangium* [11] (Figure 1) (Table 1).

PHARMACOLOGICAL ACTIVITIES

Anti-tumor effect. Many alkaloids isolated from genus *Alangium* exhibited detectable cytotoxic activity against some human cancer cell lines. The total alkaloid from *A. vitiense* were found to be noticeable oncostatic activity for leukemia [45]. Further studies showed that alkaloid deoxytubulosine (**44**) is a promising potential antitumor agent [46-48]. Compound **44** was demonstrated to potently inhibit the cellular enzyme activity of dihydrofolate reductase (DHFR) and thymidylate synthase (TS) [46, 47]. Alkaloids javaniside (**66**) from *A. javanicum* and alangiside (**63**) from *A. grisolleoides*, were described as two agents capable of Cu^{2+} -dependent DNA cleavage [22, 49]. Alangiumine A (**14**) isolated from *A. chinense* roots exhibited selective antitumor *in vitro* activity against glioma stem cells [20]. Tubulosine (**43**) isolated from *A. longiflorum* strongly inhibited HIF-1 transcriptional activity in human glioma cells [50]. Compounds **65** and **89** isolated from *A. longiflorum* are bis-alkaloids with tetrahydro-*β*-carboline and tetrahydroisoquinoline units, exhibited potent antiproliferative activities against chemosensitive cell lines, such as A549 (lung carcinoma) , MDA-MB-231 (triple-negative breast cancer), MCF-7 (estrogen receptor-positive and HER2-negative breast cancer), KB (originally isolated from epidermoid carcinoma of the nasopharynx) and KB-VIN (P-gp-overexpressing MDR subline of KB) [41]. Alkaloids **67** and **68** together with some other alkaloids isolated from *A. salviifolium* exhibited inhibitory effects against three human cancer cell lines: A-549, HeLa cervical cancer, and SKOV-3 (human ovarian carcinoma) [51, 52]. Alkaloid 10-*O*-demethylcephaeline (**61**) isolated from *A.*

longiflorum stems exhibited potent cytotoxic activity against A549 and MCF-7. Surprisingly, **61** was more potent than stereoisomer 10-*O*-demethylisocephaeline (**60**), and related compounds with different hydroxy/methoxy substitution patterns were also less potent or inactive, thus this study suggested that compound **61** merits attention as a cytotoxic lead for further study [17].

In addition to alkaloids, a large number of other structural types from the genus *Alangium* also showed antitumor activities. It was noteworthy that sesquiterpenes **299**, **302** and triterpene caffeates **314**, **315** exhibited cytotoxicity against the acute lymphoblastic leukemia (MOLT-3) cell line [24, 40]. Besides, alkaloid **88** selectively inhibited the growth of the human hepatocellular liver carcinoma (HepG2) cell line, and compounds **314, 315** together with cardinane sesquiterpenes **282**, **299**, **303-306** isolated from *A. salviifolium* exhibited potent aromatase inhibition properties (Table 2) [24, 40].

Antibacterial effect. Previous studies showed that the methanol extract of *A. salviifolium* flowers, containing flavonoids and steroids, exhibited antibacterial activity against both gram positive and gram negative bacteria [53]. Additionally, the extract of *A. chinense* flowers and leaves exhibited antibacterial effect, while its phenolic glycosides, alkaloids and organic acids were speculated as the antibacterial active ingredients (Table 2) [54].

Anti-inflammatory effect. In traditional ethnic medicine usage, *A. chinense* is used in clinical treatment of arthritis in China [55]. Previous study reported that the mechanism of *A. chinense* relieved the arthritis reaction may be related to its ability to downregulate the serum levels of tumor necrosis factor α (TNF-α), interleukin 1β (IL-1β) [56]. Further studies demonstrated that compounds **123**, **127**, **128** isolated from *A. chinense* roots exhibited significant anti-inflammatory activity in lipopolysaccharide-induced RAW264.7 cells [2]. In addition, reported study indicated that salicin (**116**) from *A. chinense* ameliorates rheumatoid arthritis (RA), which may be associated with oxidative stress pathways [57]. Another study revealed that compound **116** reduced oxidative stress, attenuated the expression of proinflammatory cytokines, and inhibited the NF-κB proinflammatory signaling pathway. Thus compound **116** may be a safe and effective therapy for the development of osteoarthritis (OA) [58].

The extract of *A. salviifolium* showed certain effects on anti-inflammatory [5, 59, 60]. Further studies exhibited that salviifosides A-C (**140**-**142**) isolated from *A. salviifolium* leaves were found to display anti-inflammatory activity against lipopolysaccharide (LPS) induced rat macrophage cell line RAW 264.7 by inhibiting the production of nitric oxide (NO) and prostaglandin E_2 (PGE_2) [27]. In addition, salviifoside B (**141**) inhibited the productions of tumor necrosis factor-*α* (TNF-*α*) (Table 2) [27].

Anti-oxidant effect. The result of the (1, 1-diphenyl-2-picryl-hydrazyl) DPPH free radical scavenging assay showed that the methanol extract of *A. salviifolium* barks (BEA) showed concentration-dependent radical scavenging activity, which suggested the antioxidant capacity of BEA. Further GC-MS analysis revealed the abundance of alkaloids and steroidal compounds in BEA [61]. Several researches showed that the compounds **64**, **314, 315** from *A. salviifolium* were demonstrated to scavenge DPPH free radicals, and alkaloids **34**, **63**, **64**, **88** together with sesquiterpenoid **298** from *A. salviifolium* exhibited potent antioxidant activities [24, 38].

Besides, the compounds from *A. chinense*, including compounds **6**, **275**-**282**, **342** were showed antioxidant activities against rat liver microsomal lipid peroxidation induced by cysteine (Table 2) [19, 62].

Effects on skeletal and smooth muscle. In the 1970s, anabasine (**1**) from *A. chinense* was found that it had muscle relaxation effect, the injections made by **1** showed the characteristics of some competitive muscle relaxants [63-65]. In addition, another study showed that compounds *β*-sitosterol (**349**), 5*β*, 6*β*-dihydroxycyclohex-2-en-1-ol 1 -*β*-glucoside (**226**) from the root barks of *A. platanifolium* combined muscarinic receptors with IC_{50} values of 8.52 ± 0.13 and 6.74 ± 0.55 *μ*M, respectively, which further supported the muscular relaxation effect of genus *Alangium* [66].

Effect on the nervous system. Previous studies reported that the extract of *A. platanifolium* root barks bind well to a variety of central nervous system receptors, including *α*-2 adrenoceptor, histamine-1, dopamine-1, and dopamine-2 receptors [67]. Further research showed that *β*-sitosterol (**349**), sitosterol 3-*O*-*β*-D-glucopyranoside (**234**) and 5*β*, 6*β*-dihydroxycyclohex-2-en-1-ol 1-*β*-glucoside (**226**) isolated from *A. platanifolium* enhanced the binding of pentobarbital to receptors, thereby enhanced the sleeping effect of pentobarbital [66]. In addition, (2*S*)-*N*-hydroxybenzylanabasine (**2**), (6*S*, 9*R*)-vomifoliol (**324**), (6*S*, 9*S*)-vomifoliol (**325**) from *A. chinense* exhibited inhibitory activity on microglial inflammation factor, with IC_{50} values of 6.7, 6.4 and 10.1 *μ*M, respectively [6, 19].

Toxicity. Some herbal medicine of genus *Alangium* has certain toxicity. As a famous poisonous medicine of Miao nationality, *A. chinense* is also known as "Ba Jiao Feng" or "Bai Long Xu". The alkaloids of *A. chinense* are considered to be the main toxic componen, which seriously limits its clinical application [55]. Reported study showed that the main target organs and tissues of the toxic effects of *A. chinense* were lung, liver, and vascular smooth muscle, while the toxic effect was related to the dose [68].

Other activities. The chloroform, ethanol and water extracts of *A. salviifolium* were reported to exhibit significant antidiabetic, and improve the oral glucose tolerance (OGTT) of diabetic rats [5]. The ethanol extract of *A. lamarckii* leaves was found to significantly inhibit the aldehyde reductase (AR) of rat lens in vitro, which suggested its potentiality to be used in the treatment of diabetic complications [69]. Recent study have found the *A. salviifolium* may be used as an alternative for synthetic pesticides against the polyphagus pest [70, 71]. Additionally, ethanolic extract of *A. salviifolium* leaves was proved its significant antidepressant activity [72]. It is worth mentioning that tubulosine congeners **24**, **43**, **44**, **65**, **93-97** exhibited moderate effects on α-tubulin in cells from patients with Parkinson's disease, which may be useful for further research on the mechanism and targets of neurodegeneration in Parkinson's disease [73]. Besides, it was found that anabasine (**1**) showed a certain effect on respiratory inhibition and cardiovascular system (Table 2) [74, 75].

CONCLUSION AND FUTURE PROSPECTIVE

This review presented the traditional uses, phytochemistry and pharmacological results of genus *Alangium* in the period of 1965–2020. Structurally, more than 300 compounds have been isolated and structurally elucidated from genus *Alangium*, including alkaloids, glycoside and terpenoids. It was noteworthy that a number of novel anabasine-type structures and terpenoids have been reported in recent year. However, the in depth study of novel skeletons remains to be further studied. For pharmacological summary, the diverse extracts and compounds from *Alangium* plants have also been reported and examined in a wide range of pharmacological assays, such as anti-tumor, anti-inflammatory, antibacterial, anti-oxidant, as well as the effects on skeletal, smooth muscle and the nervous system. Interestingly, the published results showed that some compounds of genus *Alangium* exhibited different pharmacological activity, even the chemical structures are similar, which indicated the further structure and activity analysis are necessary. Besides, as major constituents of genus *Alangium*, the alkaloid anabasine (**1**) was clinically used as muscle relaxant, thus the muscle relaxation of the anabasine related derivatives were suggested to be further explored. In addition, some herbal medicine of genus *Alangium* has certain toxicity, which seriously limited their clinical application, but the in-depth study on synergism, detoxification and toxicity mechanism was still inadequate and quite rare.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Notes

The authors declare no competing financial interest.

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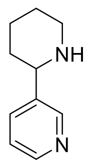
Figure 1. Structures of compounds **1-359** from the genus *Alangium*.



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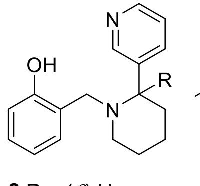
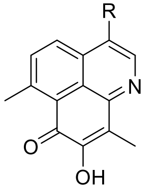
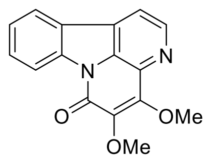


2 R = (*β*) H
3 R = (*α*) H
4 R = (*α*) OH
5 R = (*β*) OH



6 R = Me
13 R = CH_2OH



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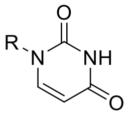
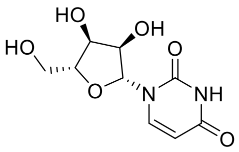


8 R = H
98 R = Me



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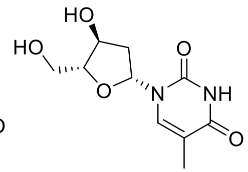

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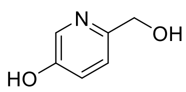

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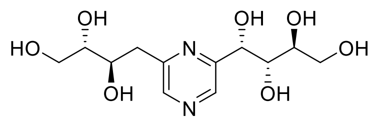

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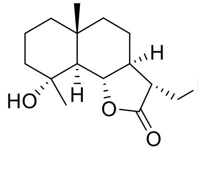

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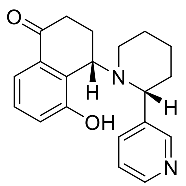

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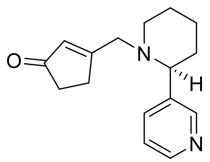

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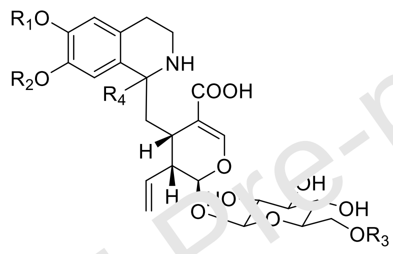
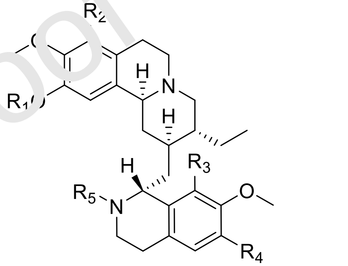
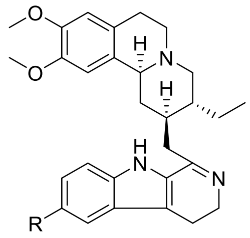


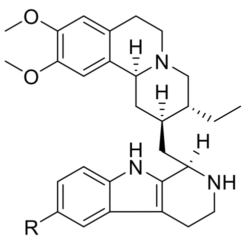
17 R_1 = Me, R_2 = R_3 = H, R_4 = (*α*) H
18 R_1 = R_3 = H, R_2 = Me, R_4 = (*α*) H
19 R_1 = R_2 = Me, R_3 = H, R_4 = (*α*) H
20 R_1 = Me, R_2 = H, R_3 = *α*-Glc, R_4 = (*α*) H
21 R_1 = Me, R_2 = R_3 = H, R_4 = (*β*) H



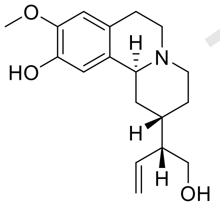
22 R_1 = Me, R_2 = H, R_3 = H, R_4 = OH, R_5 = H
27 R_1 = Me, R_2 = H, R_3 = OH, R_4 = H, R_5 = H
28 R_1 = Me, R_2 = H, R_3 = H, R_4 = OH, R_5 = CH_2-Fru
46 R_1 = Me, R_2 = H, R_3 = H, R_4 = OMe, R_5 = H
61 R_1 = H, R_2 = H, R_3 = H, R_4 = OH, R_5 = H
67 R_1 = Me, R_2 = OH, R_3 = H, R_4 = OH, R_5 = H
105 R_1 = Me, R_2 = H, R_3 = H, R_4 = OH, R_5 =CONHMe



23 R = OH
68 R = H



24 R = OH
69 R = H



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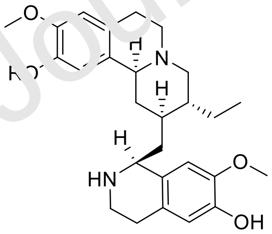

26 R = Me
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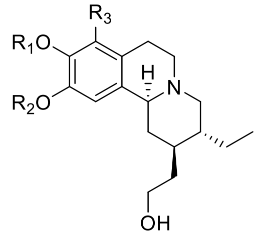
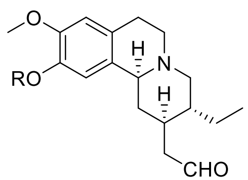
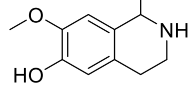


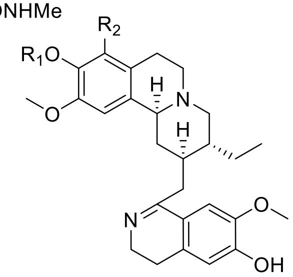
29 R_1 = R_2 = Me, R_3 = H
39 R_1 = R_2 = Me, R_3 = OH
40 R_1 = Me, R_2 = R_3 = H
57 R_1 = R_3 = H, R_2 = Me



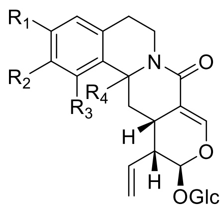
30 R = Me
62 R = H



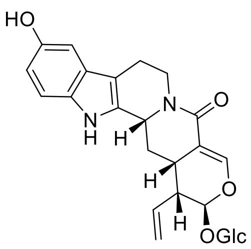
31



32 R_1 = Me, R_2 = H
41 R_1 = Me, R_2 = OH
42 R_1 = H, R_2 = H



33 $R_1 = R_2 = OMe, R_3 = H, R_4 = (\alpha)\ H$
34 $R_1 = OMe, R_2 = OH, R_3 = H, R_4 = (\alpha)\ H$
35 $R_1 = OH, R_2 = OMe, R_3 = H, R_4 = (\alpha)\ H$
36 $R_1 = H, R_2 = R_3 = OH, R_4 = (\beta)\ H$
37 $R_1 = H, R_2 = OMe, R_3 = OH, R_4 = (\beta)\ H$
63 $R_1 = OMe, R_2 = OH, R_3 = H, R_4 = (\beta)\ H$
64 $R_1 = R_2 = OH, R_3 = H, R_4 = (\beta)\ H$
88 $R_1 = OH, R_2 = OMe, R_3 = H, R_4 = (\beta)\ H$



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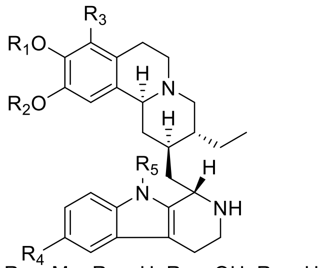
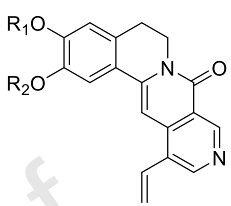
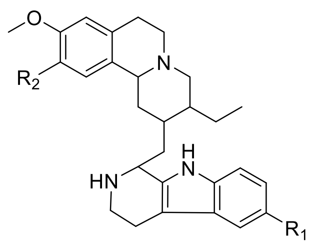


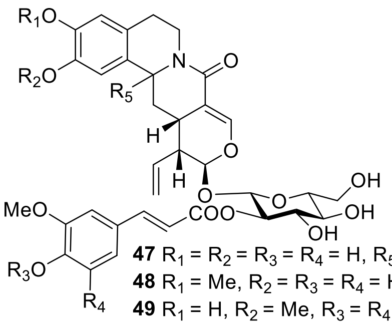
43 $R_1 = Me, R_2 = Me, R_3 = H, R_4 = OH, R_5 = H$
44 $R_1 = Me, R_2 = Me, R_3 = H, R_4 = H, R_5 = H$
54 $R_1 = Me, R_2 = H, R_3 = H, R_4 = OH, R_5 = H$
65 $R_1 = H, R_2 = Me, R_3 = H, R_4 = OH, R_5 = H$
70 $R_1 = Me, R_2 = Me, R_3 = OH, R_4 = H, R_5 = H$
81 $R_1 = Me, R_2 = H, R_3 = H, R_4 = OH, R_5 = Me$
89 $R_1 = Me, R_2 = Me, R_3 = OH, R_4 = OH, R_5 = H$



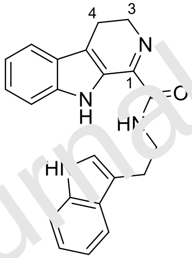
45 $R_1 = R_2 = H$
79 $R_1 = Me, R_2 = H$
102 $R_1 = H, R_2 = Me$



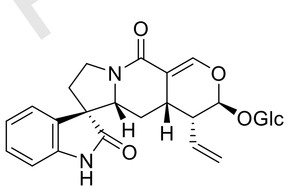
55 $R_1 = H, R_2 = OH$
56 $R_1 = R_2 = OMe$



47 $R_1 = R_2 = R_3 = R_4 = H, R_5 = (\beta)\ H$
48 $R_1 = Me, R_2 = R_3 = R_4 = H, R_5 = (\beta)\ H$
49 $R_1 = H, R_2 = Me, R_3 = R_4 = H, R_5 = (\beta)\ H$
50 $R_1 = R_2 = R_3 = H, R_4 = OMe, R_5 = (\beta)\ H$
51 $R_1 = Me, R_2 = R_3 = H, R_4 = OMe, R_5 = (\beta)\ H$
52 $R_1 = H, R_2 = Me, R_3 = H, R_4 = OMe, R_5 = (\beta)\ H$
53 $R_1 = Me, R_2 = R_4 = H, R_3 = CH(CH_2OH)_2, R_5 = (\beta)\ H$
90 $R_1 = Me, R_2 = R_3 = H, R_4 = OMe, R_5 = (\alpha)\ H$



58
59 = $\Delta_{3\text{-}4}$



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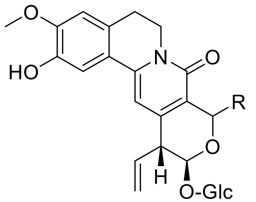
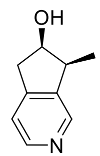
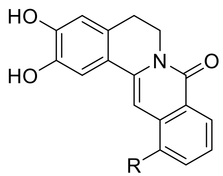


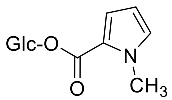
71 R = (β) OMe
80 R = (α) OMe



72



73 R = CHO
74 R = CH_2OH



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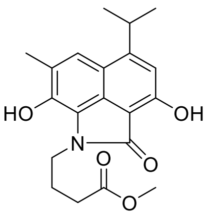

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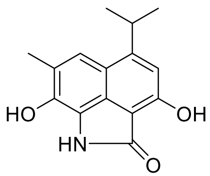

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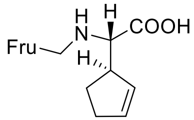

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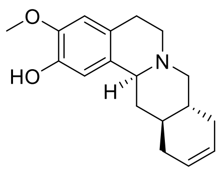

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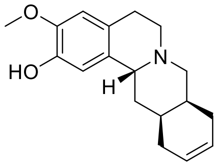

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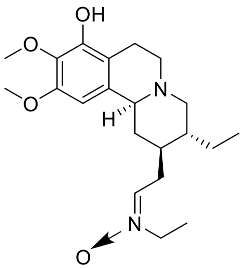

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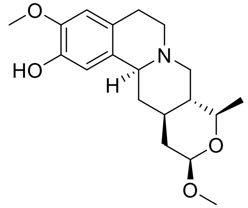

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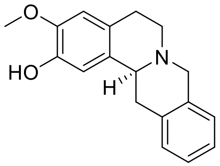
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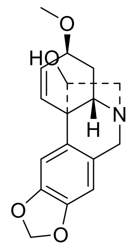
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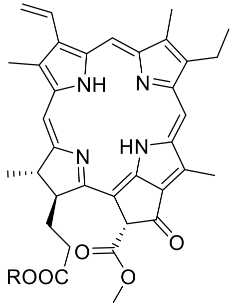
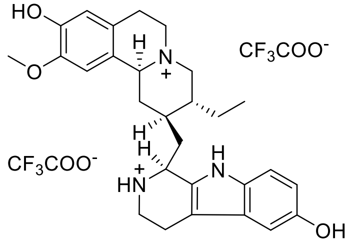

91 R = Me
92 R = Phytyl
Phytyl = (2*E*) - (7*R*, 11*R*) - 3,7,11,15 - tetramethyl - 2 - hexadecenyl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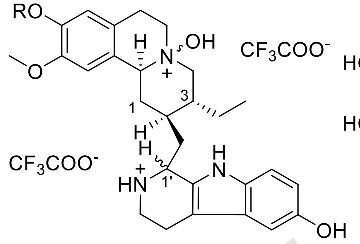
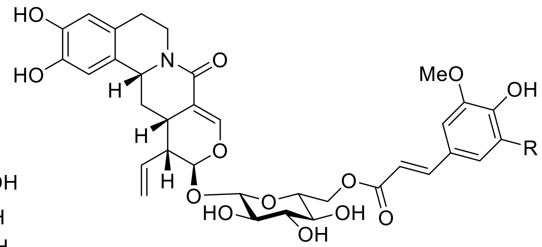
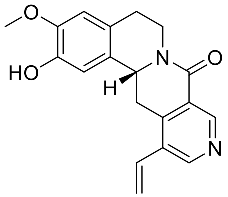

94 R = CH_3, N^5 β-OH, 1' β-H
95 R = CH_3, N^5 α-OH, 1' α-H
96 R = H, N^5 β-OH, 1' β-H
97 R = H, N^5 α-OH, 1' α-H


99 R = H
100 R = OMe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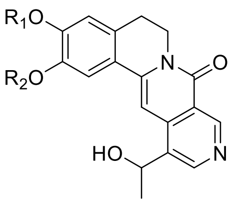
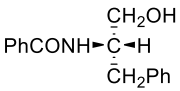

103 R_1 = Me, R_2 = H
104 R_1 = H, R_2 = Me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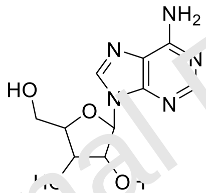
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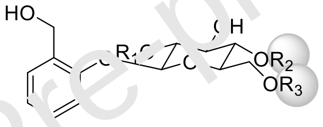
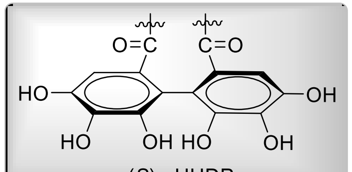
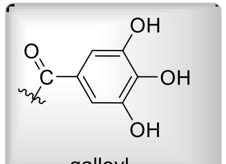
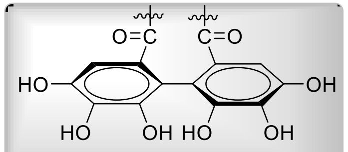
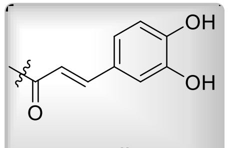
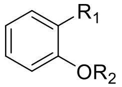

108 R_1 = R_2 = H, R_3 = galloyl
109 R_1 = H, R_2 = R_3 = galloyl
110 R_1 = H, R_2 ~ R_3 = (*R*) - HHDP
111 R_1 = H, R_2 ~ R_3 = (*S*) - HHDP
112 R_1 = R_2 = H, R_3 = caffeoyl
113 R_1 = Glc, R_2 = R_3 = H
114 R_1 = Glc, R_2 = H, R_3 = Xyl
115 R_1 = R_2 = H, R_3 = Xyl
116 R_1 = R_2 = R_3 = H
121 R_1 = R_2 = H, R_3 = Rha

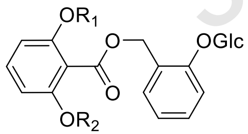

(*S*) - HHDP

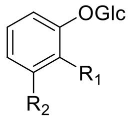

galloyl

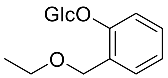

(*R*) - HHDP


caffeoyl


117 R_1 = OH, R_2 = Glc(6'-1'')Xyl
135 R_1 = OH, R_2 = Glc(6'-1'')Api
136 R_1 = CH_2OH, R_2 = Glc(6'-1'')Api


118 R_1 = Glc, R_2 = Glc
119 R_1 = H, R_2 = Glc
172 R_1 = H, R_2 = H


120 R_1 = CH_2OGlc, R_2 = H
134 R_1 = OGlc, R_2 = H
149 R_1 = OH, R_2 = OH
171 R_1 = CH_2OMe, R_2 = H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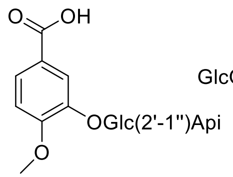
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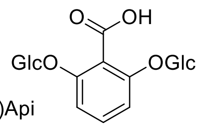
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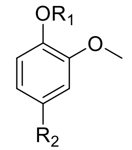
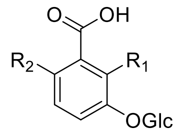
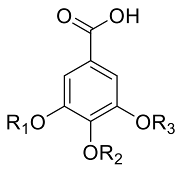
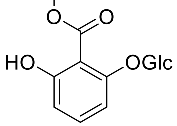

125 R_1 = Glc, R_2 = CH_2OH
128 R_1 = Glc, R_2 = OH
129 R_1 = H, R_2 = OGlc


126 R_1 = OH, R_2 = H
127 R_1 = H, R_2 = OH



130 R_1 = H, R_2 = H, R_3 = Glc
132 R_1 = Me, R_2 = Glc, R_3 = Me



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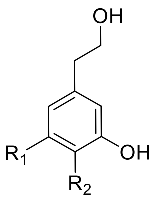
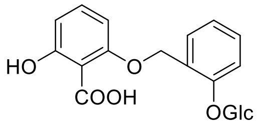


133 R_1 = H, R_2 = OGlc (2'-1'') Api
148 R_1 = OGlc, R_2 = H



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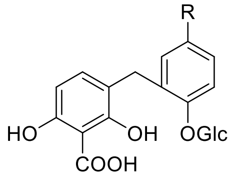
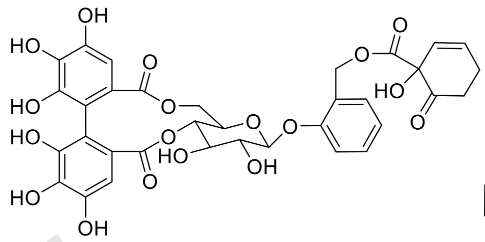


138 R = OH
170 R = H



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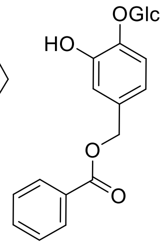

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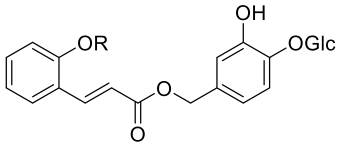
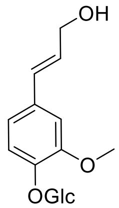


141 R = H
142 R = Me



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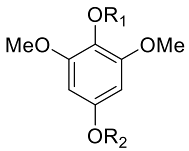
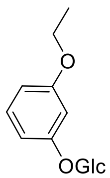


144 R_1 = Me, R_2 = Glc
145 R_1 = H, R_2 = Glc
146 R_1 = Glc, R_2 = H



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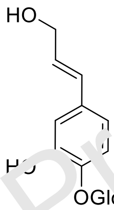

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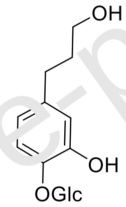

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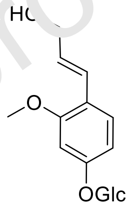

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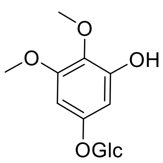

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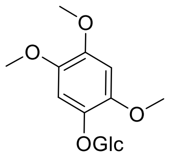

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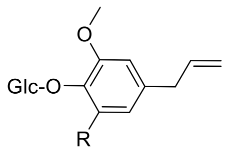
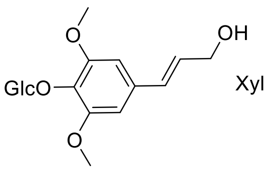


155 R = OMe
156 R = H



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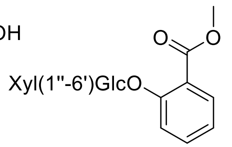

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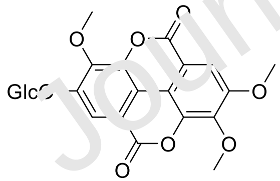

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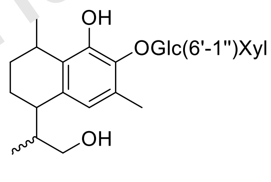
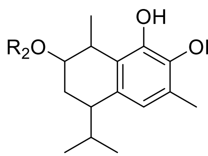
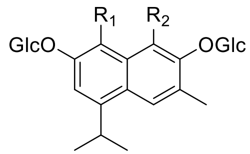


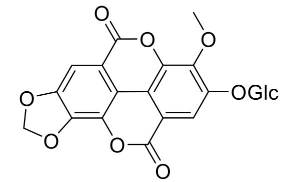
160
161



162 R_1 = Glc (6'-1''') Xyl, R_2 = Glc(1'')
167 R_1 = Glc (1'), R_2 = Glc (1'')



163 R_1 = Me, R_2 = H
164 R_1 = $COOCH_3$, R_2 = OH
165 R_1 = H, R_2 = OH



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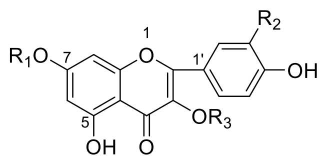
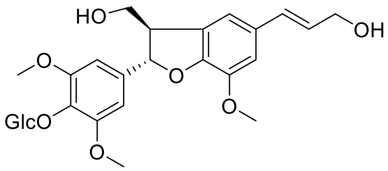


166 R_1 = Glc (1'''''), R_2 = H, R_3 = Gal (2''-1''') Rha (6''-1'''') Rha
237 R_1 = H, R_2 = H, R_3 = Glc (1'')
243 R_1 = H, R_2 = H, R_3 = Gal (2''-1''') Glc
244 R_1 = H, R_2 = H, R_3 = Gal (2''-1''') Xyl
247 R_1 = H, R_2 = OH, R_3 = Gal (2''-1''') Xyl
248 R_1 = H, R_2 = H, R_3 = Glc (2''-1''') Rha (6''-1'''') Rha
249 R_1 = H, R_2 = OMe, R_3 = Gal (2''-1''') Rha (6''-1'''') Rha
257 R_1 = H, R_2 = H, R_3 = Gal (2''-1''') Rha (6''-1'''') Rha
265 R_1 = H, R_2 = H, R_3 = Glc (6''-1''') Rha
266 R_1 = H, R_2 = H, R_3 = Glc (2''-1''') Rha
267 R_1 = H, R_2 = OH, R_3 = Glc (2''-1''') Rha (6''-1'''') Rha
269 R_1 = H, R_2 = OH, R_3 = Glc (1'')
270 R_1 = H, R_2 = OH, R_3 = Glc (6''-1''') Rha



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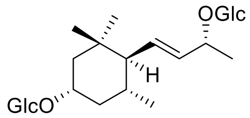

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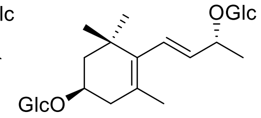

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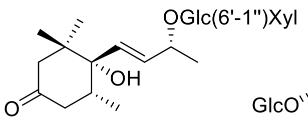

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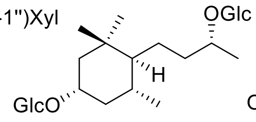

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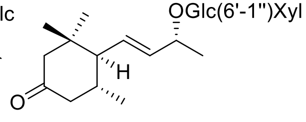

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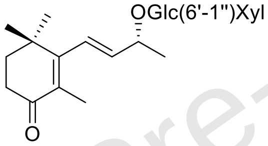

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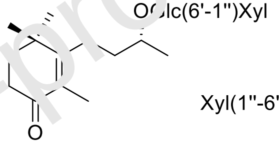

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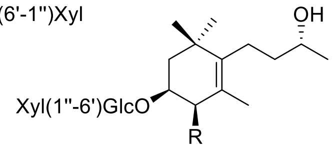
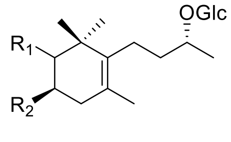
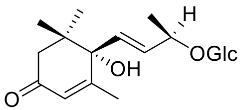


180 R = H
181 R = OH



182 R_1 = (β) OH, R_2 = H
202 R_1 = H, R_2 = OGlc



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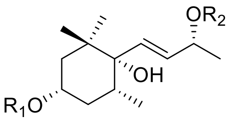
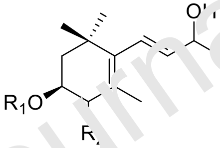
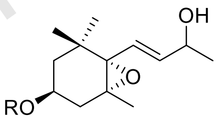


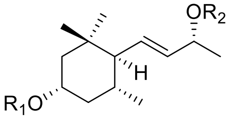
184 R_1 = H, R_2 = Glc
185 R_1 = H, R_2 = Glc (6'-1'') Api
186 R_1 = Glc, R_2 = H



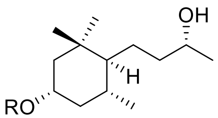
187 R_1 = H, R_2 = (β) OGlc
188 R_1 = Glc, R_2 = (α) OH
191 R_1 = Glc, R_2 = (β) OH



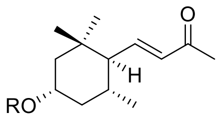
189 R = Glc
190 R = Glc (6'-1'') Xyl



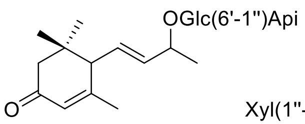
192 R_1 = Glc, R_2 = H
193 R_1 = Glc (6'-1'') Xyl, R_2 = H
194 R_1 = H, R_2 = Glc (6'-1'') Api



195 R = Glc
196 R = Glc (6'-1'') Xyl



197 R = Glc
198 R = Glc (6'-1'') Xyl



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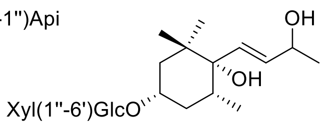

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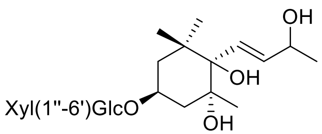

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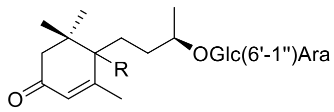
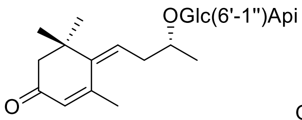


203 R = (α) H
204 R = (β) H



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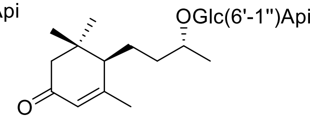

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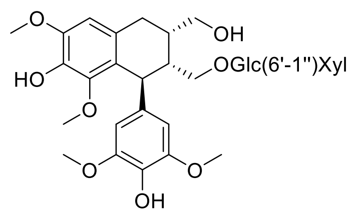

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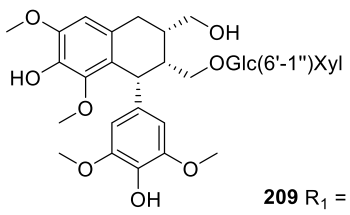

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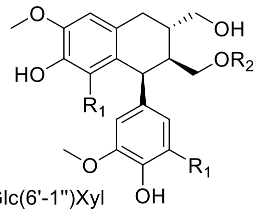
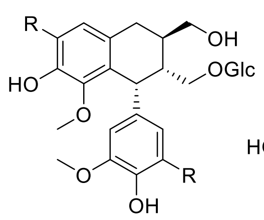
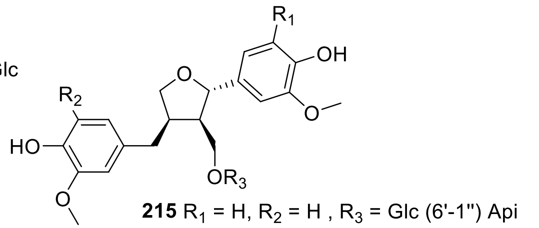


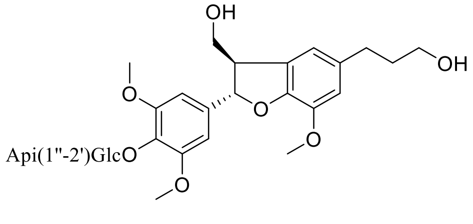
209 R_1 = H, R_2 = Glc(6'-1'')Xyl
212 R_1 = H, R_2 = Glc
213 R_1 = OMe, R_2 = Glc
214 R_1 = H, R_2 = Glc(6'-1'')Api



210 R = H
211 R = OMe



215 R_1 = H, R_2 = H , R_3 = Glc (6'-1'') Api
216 R_1 = OMe, R_2 = H, R_3 = Glc (6'-1'') Api
217 R_1 = OMe, R_2 = H, R_3 = Glc
218 R_1 = OMe, R_2 = OMe, R_3 = Glc



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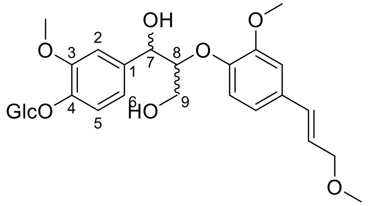
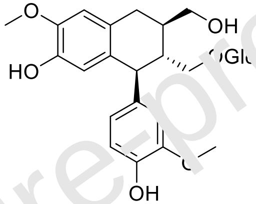


220 7*S*, 8*R*
221 7*R*, 8*S*



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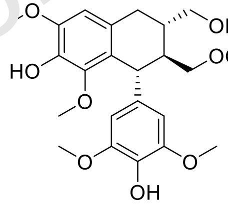

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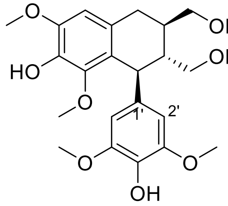
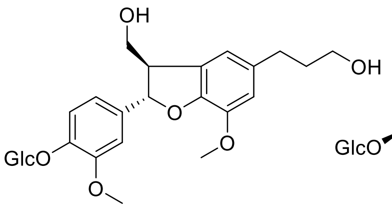


224 R = Glc
228 R = Glc (6''-1''') Xyl



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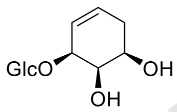

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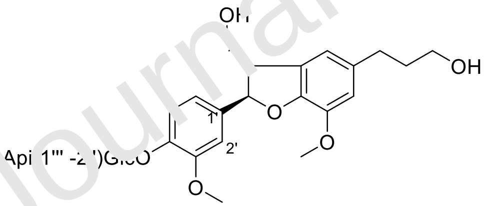
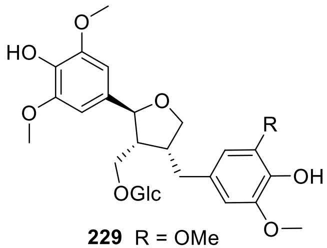
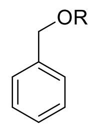


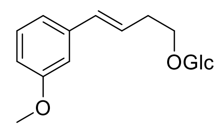
227



229 R = OMe
230 R = H



231 R = Glc (6'-1'') Xyl (2'-1''') Glc
232 R = Glc (6'-1'') Xyl
262 R = Glc (2'-1'') Api (6'-1''') Xyl
263 R = Glc (2'-1'') Api (3'-1''') Glc



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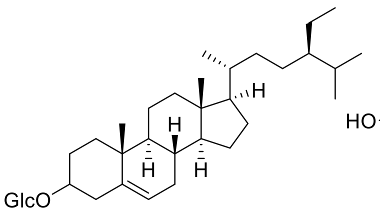

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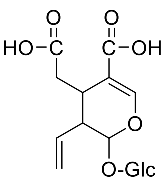
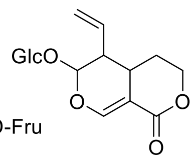


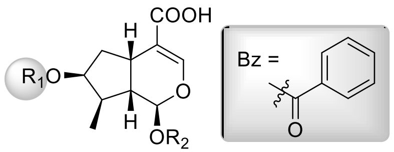
235

β-D-Fru(1-4)-α-D-Fru

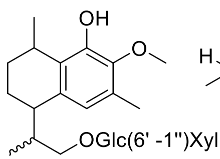
236



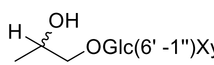
238



239 R_1 = H, R_2 = Glc (6'-1'') -α-Glc
240 R_1 = H, R_2 = Glc
241 R_1 = *E*-ferulic acid (1''-9''), R_2 = Glc
242 R_1 = *Z*-ferulic acid (1''-9''), R_2 = Glc
268 R_1 = Bz, R_2 = Glc



245
246



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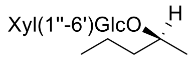

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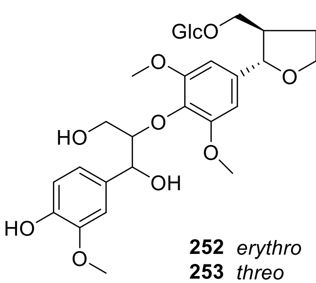
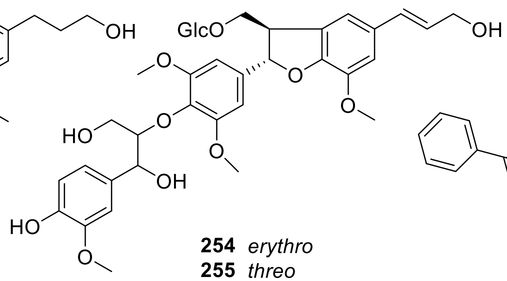
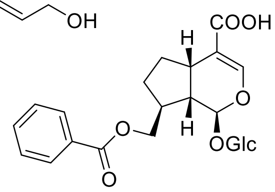


252 *erythro*
253 *threo*



254 *erythro*
255 *threo*



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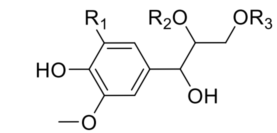
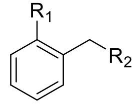
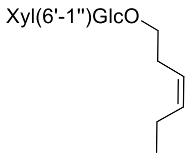


258 $R_1 = R_2 = H, R_3 = Glc$
259 $R_1 = R_3 = H, R_2 = Glc$
260 $R_1 = OMe, R_2 = H, R_3 = Glc$
261 $R_1 = OMe, R_2 = Glc, R_3 = H$



264 $R_1 = OH, R_2 = OGlc(6'\text{-}1'')Xyl$
271 $R_1 = H, R_2 = CH_2OGlc(6'\text{-}1'')Xyl$



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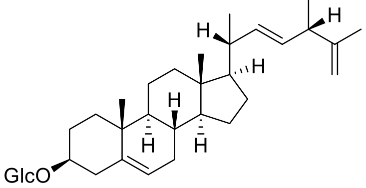

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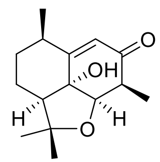

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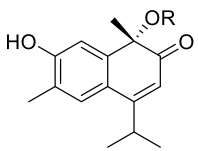
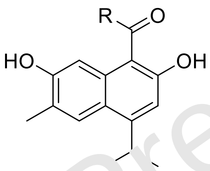
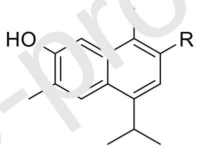


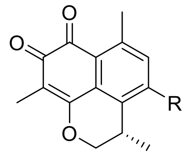
275 R = Me
276 R = H



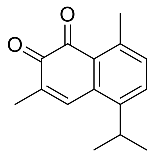
277 R = H
278 R = OMe



279 R = H
280 R = OH



281 R = H
282 R = OH



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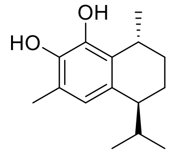

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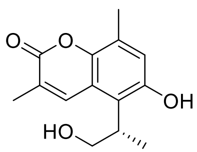

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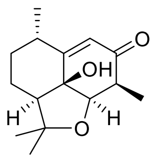

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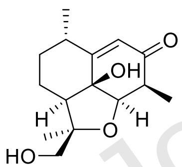

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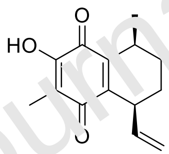

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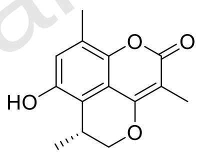

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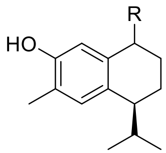
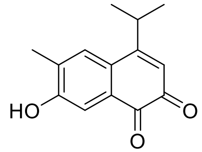


290 R = (β) Me
291 R = (α) Me



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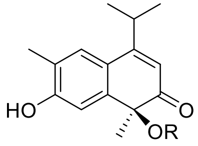
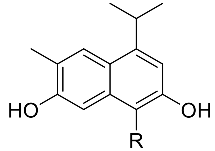
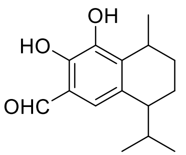


293 R = H
294 R = Me



295 R = Me
296 R = CHO
297 R = $COOCH_3$



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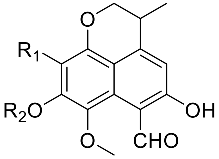
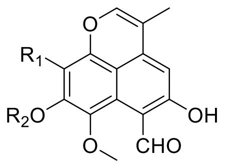
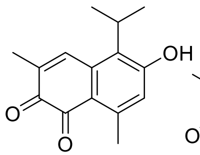


299 $R_1 = CH_2OH, R_2 = Me$
300 $R_1 = CH_2OH, R_2 = H$
301 $R_1 = CHO, R_2 = H$



302 $R_1 = CH_2OH, R_2 = Me$
303 $R_1 = CH_2OH, R_2 = H$
304 $R_1 = CHO, R_2 = H$
305 $R_1 = CHO, R_2 = Me$



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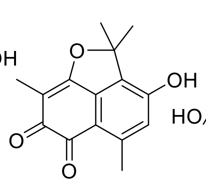

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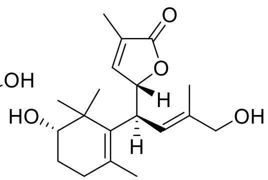

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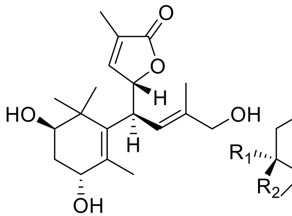

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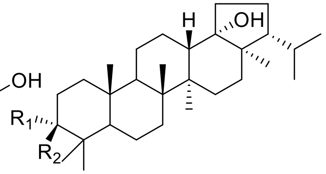
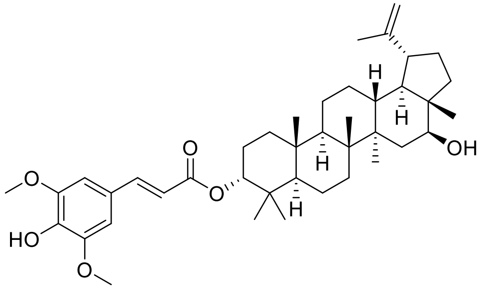


310 $R_1 = H, R_2 = OH$
311 $R_1 = OH, R_2 = H$



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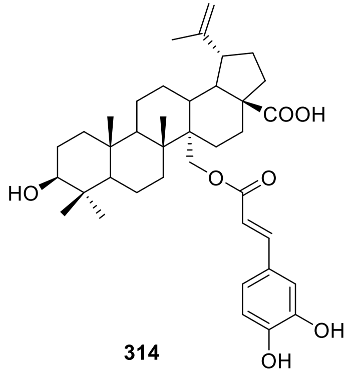

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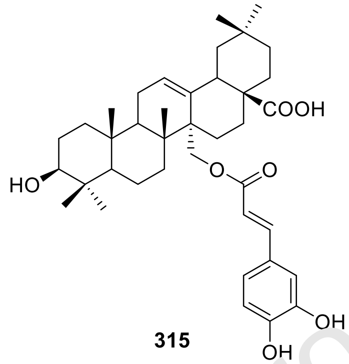

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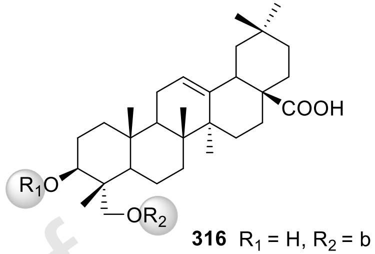
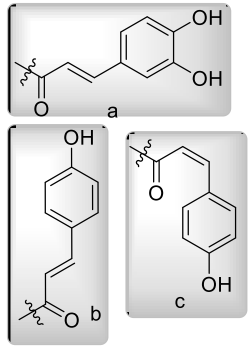
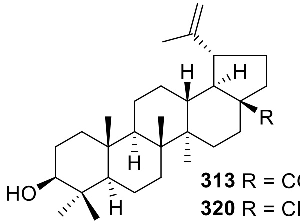
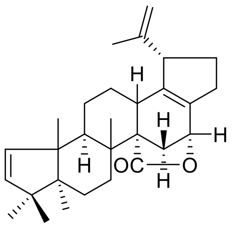




316 R_1 = H, R_2 = b
317 R_1 = H, R_2 = c
318 R_1 = a, R_2 = b
319 R_1 = R_2 = b



313 R = COOH
320 R = CHO
321 R = CH_2OH
322 R = Me



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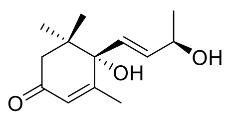

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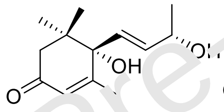

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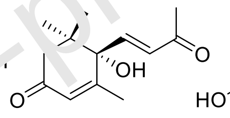

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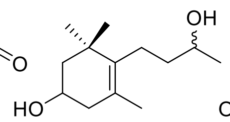

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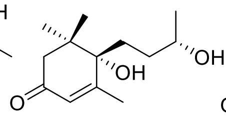

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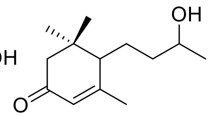

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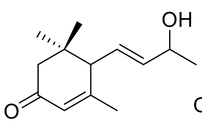

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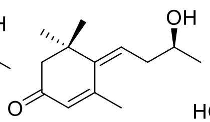

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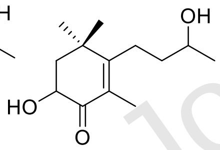

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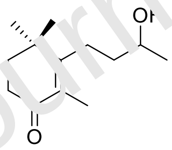

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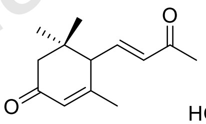

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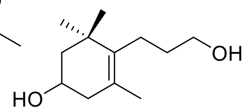

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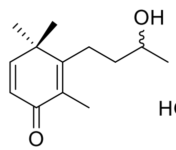

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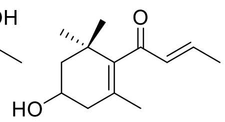

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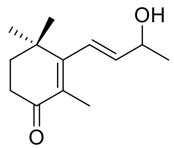

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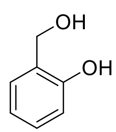

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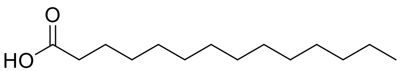

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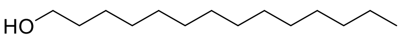

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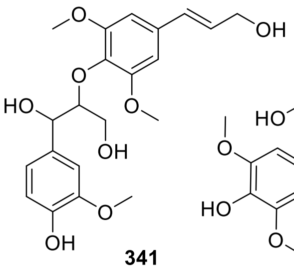

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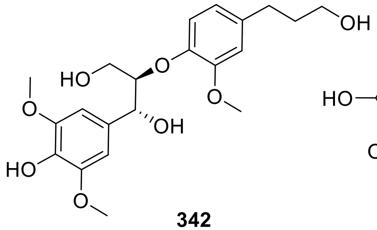

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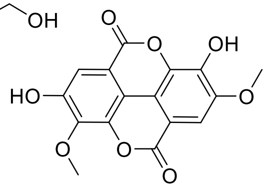

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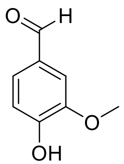

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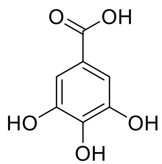

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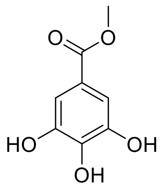

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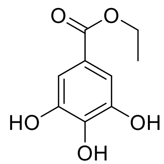

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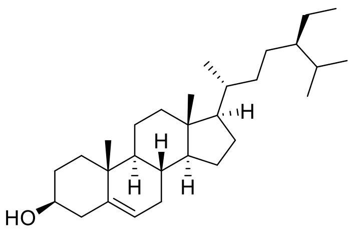
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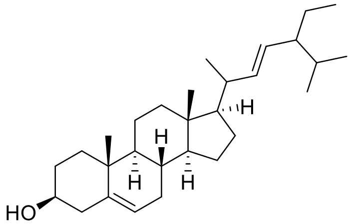
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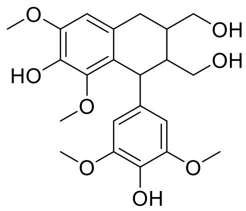
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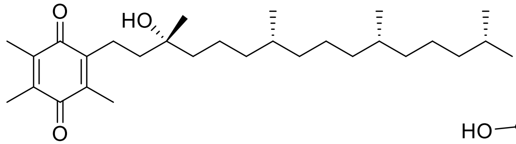
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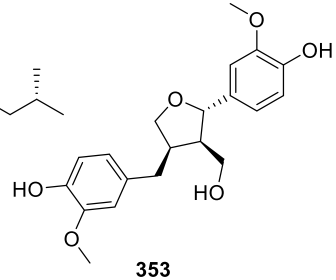
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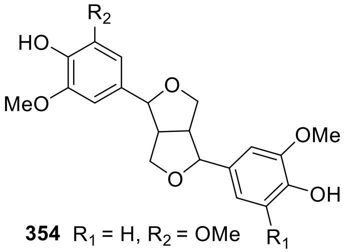
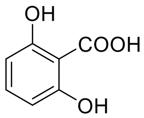

354 R_1 = H, R_2 = OMe
355 R_1 = R_2 = H
356 R_1 = R_2 = OMe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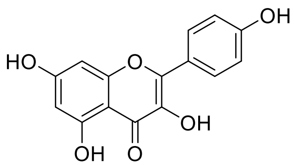
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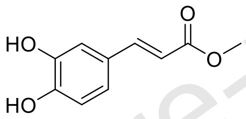
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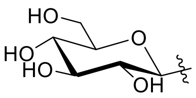
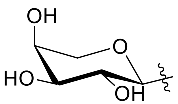
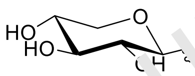
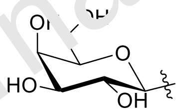
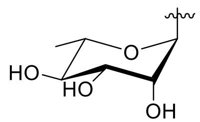
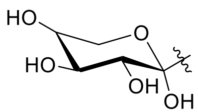

Glucopyranosyl-


Arabinopyranosyl-


Xylopyranosyl-


Galactopyranosyl-


Rhamnopyranosyl-


Fructopyranosyl-

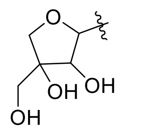

Apiofuranosyl-

Table 1. A comprehensive list of the compounds from the genus *Alangium*

NO.	Compounds	Plant	Parts of plant	References
Alkaloids				
1	Anabasine	*A. chinense*	Roots	[18]
2	(2*S*)-*N*-hydroxybenzylanabasine	*A. chinense*	Roots	[19]

3	(2*R*)-*N*-hydroxybenzylanabasine	*A. chinense*	Roots	[19]
4	(2*S*)-2-hydroxy-*N*-hydroxybenzylanabasine	*A. chinense*	Roots	[19]
5	(2*R*)-2-hydroxy-*N*-hydroxybenzylanabasine	*A. chinense*	Roots	[19]
6	8-hydroxy-3,6,9-trimethyl-7*H*-benzo [*de*] quinolin-7-one	*A. chinense*	Roots	[19]
7	4,5-dimethoxycanthin-6-one	*A. chinense*	Roots	[19, 76]
8	Uracil	*A. chinense*	Roots	[2]
9	Uridine	*A. chinense*	Roots;	[2]
		A. kurzii	Leaves	[77]
10	Thymidine	*A. chinense*	Roots	[2]
11	2-hydroxymethyl-5-hydroxypyridine	*A. chinense*	Roots	[2]
12	2,6-deoxyfructosazine	*A. chinense*	Roots	[2]
13	8-hydroxy-3-hydroxymethyl-6,9-dimethyl-7*H*-benzo [*de*] Isoquinolin-7-one	*A. chinense*	Roots	[76]
14	Alangiumine A	*A. chinense*	Fibrous roots	[20]
15	Alangiumine B	*A. chinense*	Fibrous roots	[20]
16	Alangiumine C	*A. chinense*	Fibrous roots	[20]
17	6-*O*-methyl-*N*-deacetylisoipecosidic acid	*A. lamarckii*	Fruits	[78]
18	7-*O*-methyI-*N*-deacetylisoipecosidic acid	*A. lamarckii*	Fruits	[78]
19	6,7-di-*O*-methyl-*N*-deacetylisoipecosidic acid	*A. lamarckii*	Fruits	[78]
		A. longiflorum	Stem barks	[17]
20	6″-*O*-*α*-D-glucopyranosyl-6-*O*-methyl-N-deacetylisoipecosidic acid	*A. lamarckii*	Fruits	[78]
21	6-*O*-methyl-*N*-deacetylipecosidic acid	*A. lamarckii*	Fruits	[78]

		A. kurzii	Leaves	[77]
22	Cephaeline	*A. lamarckii*	Fruits	[78]
			Barks	[79]
		A. longiflorum	Stem barks	[17]
		A. salviifolium	Fruits, seeds	[51]
			Thick branches	[80]
			Stems	[52]
23	1′,2′-dehydrotubulosine	*A. lamarckii*	Fruits	[81]
24	Isotubulosine	*A. lamarckii*	Fruits	[81]
		A. longiflorum;	Roots	[50]
		A. villosum	Ground plant	[73]
25	Alangine	*A. lamarckii*	Fruits	[81]
26	Isocephaeline	*A. lamarckii*	Fruits	[81]
		A. salviifolium	Fruits, seeds	[51]
			Stems	[52]
27	Neocephaeline	*A. lamarckii*	Fruits	[81]
28	2′-*N*-(1″-deoxy-1″-*β*-D-fructopyranosyl)cephaeline	*A. lamarckii*	Fruits	[81]
		A. salviifolium	Fruits, seeds	[51]
29	Protoemetinol	*A. lamarckii*	Fruits	[81]
		A. salviifolium	Stems	[52]
30	Protoemetine	*A. lamarckii*	Fruits	[81]

31	Salsoline	*A. lamarckii*	Fruits	[81]
32	Psychotrine	*A. lamarckii*	Fruits	[81]
		A. salviifolium	Thick branches	[80]
33	Methylisoalangiside	*A. lamarckii*	Fruits	[82]
34	Isoalangiside	*A. lamarckii*	Fruits	[82]
		A. salviifolium	Stems	[24]
		A. longiflorum	Leaves	[41]
35	3-*O*-demethyl-2-*O*-methylisoalangiside	*A. lamarckii*	Fruits	[82]
36	Demethylneoalangiside	*A. lamarckii*	Fruits	[82]
37	Neoalangiside	*A. lamarckii*	Fruits	[82]
38	10-hydroxyvincoside lactam	*A. lamarckii*	Fruits	[82]
39	Ankorine	*A. lamarckii*	No indicated	[83]
		A. salviifolium	Thick branches	[80]
			Stems	[52]
		A. longiflorum	Leaves	[41]
40	10-demethylprotoemetinol	*A. lamarckii*	No indicated	[83]
		A. salviifolium	Stems	[52]
41	Alangicine	*A. lamarckii*	No indicated	[83]
			Roots bark	[84]
42	Desmethylpsychotrine	*A. lamarckii*	No indicated	[83]
			Roots bark	[84]

43	Tubulosine	*A. bussyanum*	Leaves	[21]
		A. lamarckii	Barks	[79]
			No indicated	[83]
			Stem-bark	[85]
		A. salviifolium	Fruits, seeds	[51]
			Stems	[52]
		A. longiflorum	Roots	[50]
		A. villosum	Ground plant	[73]
44	Deoxytubulosine	*A. lamarckii*	Fruits	[86]
			No indicated	[83, 46]
		A. bussyanum	Leaves	[21]
		A. salviifolium	Fruits, seeds	[51]
			Stems	[52]
		A. villosum	Ground plant	[73]
45	Angustinine	*A. lamarckii*	Root, stem barks	[87]
46	Emetine	*A. lamarckii*	Root, stem barks	[87]
			Barks	[79]
			No indicated	[83]
		A. longiflorum	Roots	[50]
		A. longiflorum	Stem bark	[17]
47	2'-*O*-*trans*-feruloyldemethylalangiside	*A. lamarckii*	Fruits	[8]

		A. longiflorum	Leaves	[41]
48	2'-*O*-*trans*-feruloylalangiside	*A. lamarckii*	Fruits	[8]
49	2'-*O*-*trans*-feruloyl-3-*O*-demethyl-2-*O*-methylalangiside	*A. lamarckii*	Fruits	[8]
50	2'-*O*-*trans*-sinapoyldemethylalangiside	*A. lamarckii*	Fruits	[8]
		A. longiflorum	Leaves	[41]
51	2'-*O*- *trans*-sinapoylalangiside	*A. lamarckii*	Fruits	[8]
		A. longiflorum	Leaves	[41]
52	2'-*O*-*trans*-sinapoyl-3-*O*-demethyl-2-*O*-methylalangiside	*A. lamarckii*	Fruits	[8]
		A. longiflorum	Leaves	[41]
53	2'-*O*-*trans*-[4-(l,3-dihydroxypropoxy)-3-methoxycinnamoyl]alangiside	*A. lamarckii*	Fruits	[8]
54	Demethyltubulosine	*A. bussyanum*	Leaves	[21]
		A. lamarckii	No indicated	[83]
55	Deoxydesmethyltubulosine	*A. bussyanum*	Leaves	[21]
56	*O*-methyltubulosine	*A. bussyanum*	Leaves	[21]
57	9-demethylprotoemetinol	*A. lamarckii*	No indicated	[83]
58	Alangiobussine	*A. bussyanum*	Leaves	[21]
59	Alangiobussinine	*A. bussyanum*	leaves	[21]
60	(-)10-*O*-Demethylisocephaeline	*A. longiflorum*	Stem bark	[17]
61	10-*O*-Demethylcephaeline	*A. longiflorum*	Stem bark	[17]
62	10-*O*-Demethylprotoemetine	*A. longiflorum*	Stem bark	[17]
63	Alangiside	*A. longiflorum*	Stem bark	[17]

			Leaves	[41]
		A. javanicum	Leaves	[49]
		A. salviifolium	Stems	[24]
		A. lamarckii	Leaves	[77]
64	Demethylalangiside	*A. longiflorum*	Stem barks	[17]
			Leaves	[41]
		A. salviifolium	Stems	[24]
		A. lamarckii	Leaves	[77]
65	9-Demethyltubulosine	*A. longiflorum*	Roots	[50]
		A. longiflorum	Leaves	[41]
		A. villosum	Ground plant	[73]
66	Javaniside	*A. javanicum*	Leaves	[22]
67	8-hydroxyl-cepheline	*A. salviifolium*	Fruits, seeds	[51]
68	$\Delta^{1',2'}$-deoxytubulosine	*A. salviifolium*	Fruits, seeds	[51]
69	Deoxyisotubulosine	*A. salviifolium*	Fruits, seeds	[51, 88]
70	Alangimarckine	*A. salviifolium*	Fruits, seeds	[51]
			Stems	[52]
71	Compound IV	*A. salviifolium*	Fruits, seeds	[51]
		A. lamarckii	Fruits	[89]
72	Venoterpine	*A. salviifolium*	Thick branches	[80]
		A. lamarckii	No indicated	[83]

73	Alangiumkaloid A	*A. salviifolium*	Stems	[24]
74	Alangiumkaloid B	*A. salviifolium*	Stems	[24]
75	*β*- D -glucopyranos-1-yl *N*-methylpyrrole-2-carboxylate	*A. salviifolium*	Stems	[24]
76	Alangiulactam	*A. alpinum*	Stems	[23]
77	Thespesilactam	*A. alpinum*	Stems	[23]
78	Alanchinin	*A. chinense*	Roots	[90]
79	Alangimarine	*A. lamarckii*	Fruits	[89]
80	Compound III	*A. lamarckii*	Fruits	[89]
81	Tubulosatine	*A. lamarckii*	Barks	[79]
82	Alangiifoliumine A	*A. salviifolium*	Stems	[52]
83	Alangiifoliumine B	*A. salviifolium*	Stems	[52]
84	Alangiifoliumine C	*A. salviifolium*	Stems	[52]
85	Alangiifoliumine D	*A. salviifolium*	Stems	[52]
86	Bharatamine	*A. salviifolium*	Stems	[52]
87	Natalensine	*A. salviifolium*	Stems	[52]
88	3-*O*-demethyl-2-*O*-methylalangiside	*A. salviifolium*	Stems	[24]
		A. longiflorum	Leaves	[41]
		A. lamarckii	Fruits	[82]
89	8-hydroxytubulosine	*A. longiflorum*	Leaves	[41]
90	2′-O-*trans*-sinapoylisoalangiside	*A. longiflorum*	Leaves	[41]
91	Methyl pheophorbide a	*A. longiflorum*	Leaves	[41]

92	Pheophytin a	*A. longiflorum*	Leaves	[41]
93	9-demethylisotubulosine	*A. villosum*	Ground plant	[73]
94	Tubulosine N_{β}^{5} -oxide	*A. villosum*	Ground plant	[73]
95	Isotubulosine N_{α}^{5} -oxide	*A. villosum*	Ground plant	[73]
96	9-demethyltubulosine N_{β}^{5} -oxide	*A. villosum*	Ground plant	[73]
97	9-demethylisotubulosine N_{α}^{5} -oxide	*A. villosum*	Ground plant	[73]
98	1-Methyl-1H-pyrimidine-2,4-dione	*A. salviifolium*	Flowers	[91]
99	6′-*O*-feruloyl-demethylalangiside	*A. platanifolium*	Leaves	[92]
100	6′-*O*-sinapoyl-demethylalangiside	*A. platanifolium*	Leaves	[92]
101	Alangimaridine	*A. lamarckii*	No indicated	[83, 93]
102	Isoalangimarine	*A. lamarckii*	No indicated	[83, 93]
103	Alamarine	*A. lamarckii*	No indicated	[83]
104	Isoalamarine	*A. lamarckii*	No indicated	[83]
105	Alangimide	*A. lamarckii*	No indicated	[83]
106	N-benzoyl-L-phenylalaninol	*A. lamarckii*	No indicated	[83]
107	Adenosine	*A. platanifolium*	Leaves	[34]
Glycosides				
Phenol glycosides				
108	6′-*O*-galloylsalicin	*A. chinense*	Leaves	[94]
109	4′,6′-di-*O*-galloylsalicin	*A. chinense*	Leaves	[94]
110	4′,6′-*O*-(*R*)-hexahydroxydiphenoylsalicin	*A. chinense*	Leaves	[94]

111	4′,6′-*O*-(*S*)-hexahydroxydiphenoylsalicin	*A. chinense*	Leaves	[94]
		A. plantanifolium	Stem barks	[26]
112	6′-*O*-*trans*-caffeoylsalicin	*A. chinense*	Leaves	[94]
113	2′-*O*-*β*-D-glucopyranosylsalicin	*A. chinense*	Leaves	[95]
114	2′-*O*-*β*-D-glucopyranosyl-6′-*O*-*β*-D-xylopyranosylsalicin	*A. chinense*	Leaves	[95]
115	6′-*O*-*β*-D-xylopyranosylsalicin	*A. chinense*	Leaves	[95]
116	Salicin	*A. chinense*	Roots	[2]
		A. chinense	Leaves	[94, 95]
		A. plantanifolium	Stem barks	[26]
		A. salviifolium	Leaves	[27]
117	Pyrocatechol 1-O-*β*-D-xylopyranosyl(1→6)-*β*-D-glucopyranoside	*A. chinense*	Leaves	[94]
118	6′-*O*-*β*-D-glucopyranosylhenryoside	*A. chinense*	Leaves	[94, 95]
			Roots	[2]
		A. kurzii	Leaves	[76]
119	Henryoside	*A. chinense*	Roots	[2, 90]
120	7-*O*-*β*-glucopyranosylsalicin	*A. chinense*	Roots	[90]
121	2-(hydroxymethyl)phenol 1-*O*-*β*-D-glucopyranose-(1→6)-*O*-*α*-L-rhamno-pyranoside	*A. chinense*	Roots	[62]
122	2-(ethoxymethyl)phenol 1-*O*-*β*-D-glucopyranoside	*A. chinense*	Roots	[62]
123	Chinenside A	*A. chinense*	Roots	[2]
124	Chinenside B	*A. chinense*	Roots	[2]
125	Vanilloloside	*A. chinense*	Roots	[2]

		A. alpinum	Stems	[23]
126	2-hydroxy-3-*O*-*β*-D-glucopyranosylbenzoic acid	*A. chinense*	Roots	[2]
127	Gentisic acid-5-*O*-*β*-D-glucoside	*A. chinense*	Roots	[2]
128	Isotachioside	*A. chinense*	Roots	[2]
129	Tachioside	*A. chinense*	Roots	[2]
130	Gallic acid-3-*O*-*β*-D-glucoside	*A. chinense*	Roots	[2]
131	MethyI salicylate-6-*O*-*β*-D-glucopyranosylbenzoic acid	*A. chinense*	Roots	[2]
132	Glucosyringic acid	*A. chinense*	Roots	[2]
		A. alpinum	Stems	[23]
133	3,4-dihydroxyphenethyl alcohol 3-*O*-(2'-*O*-*β*-apiofuranosyl)-*β*-glucopyranoside	*A. premnifolium*	Leaves	[96]
134	1,2-di-*O*-*β*-glucopyranoside of pyrocatechol	*A. premnifolium*	Leaves	[96]
135	Catechol *O*-*β*-D-(6′-*O*-*β*-D-apiofuranosyl)glucopyranoside	*A. platanifolium*	Leaves	[97]
136	6′-*O*-*β*-D-apiofuranoside of salicin	*A. platanifolium*	Leaves	[97]
137	Plataplatanoside	*A. platanifolium*	Leaves	[97]
138	4-hydroxyalangifolioside	*A. platanifolium*	Leaves	[97]
139	Alangitanifoliside A	*A. plantanifolium*	Stem barks	[26]
140	Salviifoside A	*A. salviifolium*	Leaves	[27]
141	Salviifoside B	*A. salviifolium*	Leaves	[27]
142	Salviifoside C	*A. salviifolium*	Leaves	[27]
143	Coniferin	*A. kurzii*	Branches	[3]
144	3,4,5-trimethoxyphenyl-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]

145	3,5-dimethoxy-4-hydroxy-L-*O*-D-glucoside	*A. kurzii*	Branches	[3]
146	Koaburaside	*A. alpinum*	Stems	[23]
		A. kurzii	Branches	[3]
147	3-ethoxyphenyl *β*-D-galactopyranoside	*A. alpinum*	Stems	[23]
148	Grevilloside G	*A. alpinum*	Stems	[23]
149	2,3-dihydroxyphenyl *β*-D-glucopyranoside	*A. alpinum*	Stems	[23]
150	(*E*)-caffeyl alcohol 4-*O*-*β*-D-glucopyranoside	*A. alpinum*	Stems	[23]
151	7,8-dihydrocaffeyl alcohol 4-*O*-*β*-D-glucopyranoside	*A. alpinum*	Stems	[23]
152	Daphnenoside	*A. alpinum*	Stems	[23]
153	Ficuglucoside	*A. alpinum*	Stems	[23]
154	2,4,5-trimethoxyphenyl-*β*-D-glucopyranoside	*A. alpinum*	Stems	[23]
155	Dictamnoside A	*A. alpinum*	Stems	[23]
156	Citrusin C	*A. alpinum*	Stems	[23]
157	Ligustrin	*A. alpinum*	Stems	[23]
158	Monotropitin	*A. alpinum*	Stems	[23]
159	3,3′,4-trimethyl-4′-*O*-*β*-D-glucopyranosyl ellagic acid	*A.javanicum*	Leaves	[98]
160	Alangicadinoside F	*A. premnifolium*	Stems	[99]
161	Alangicadinoside G	*A. premnifolium*	Stems	[99]
162	Alangicadinoside B	*A. premnifolium*	Leaves	[100]
163	Alangicadinoside C	*A. premnifolium*	Leaves	[100]
164	Alangicadinoside D	*A. premnifolium*	Leaves	[100]

165	Alangicadinoside E	*A. premnifolium*	Leaves	[100]
166	Alangiflavoside	*A. premnifolium*	Leaves	[101]
167	Alangicadinoside A	*A. premnifolium*	Leaves	[100]
168	Alangilignoside B	*A. premnifolium*	Stems	[36]
169	3′-*O*-methyl-3,4-methylenedioxyellagic acid 4′-*O*-*β*-D-glucopyranoside	*A. chinense*	Roots	[2]
170	Alangifolioside	*A. platanifolium*	Leaves	[102]
171	7-*O*-methylsalicin	*A. platanifolium*	Leaves	[34]
172	7-*O*-(2,6-dihydroxybenzoyl)salicin	*A. platanifolium*	Leaves	[34]
Megastigmane glycosides				
173	Platanionoside A	*A. platanifolium*	Leaves	[28]
174	Platanionoside B	*A. platanifolium*	Leaves	[28]
175	Platanionoside C	*A. platanifolium*	Leaves	[28]
176	Platanionoside D	*A. platanifolium*	Leaves	[29]
177	Platanionoside E	*A. platanifolium*	Leaves	[29]
178	Platanionoside F	*A. platanifolium*	Leaves	[29]
179	Platanionoside G	*A. platanifolium*	Leaves	[29]
180	Platanionoside H	*A. platanifolium*	Leaves	[29]
181	Platanionoside I	*A. platanifolium*	Leaves	[29]
182	Platanionoside J	*A. platanifolium*	Leaves	[29]
183	(6*S*,9*R*)-roseoside	*A. platanifolium*	Leaves	[29]
		A. chinense	Roots	[6]

184	Alangionoside A	*A. platanifolium*	Leaves	[29]
		A. premnifolium	Leaves	[30]
185	Alangionoside B	*A. premnifolium*	Leaves	[30]
186	Dendranthemoside A	*A. premnifolium*	Leaves	[30]
187	Alangionoside C	*A. premnifolium*	Leaves	[31]
188	Alangionoside D	*A. premnifolium*	Leaves	[31]
189	Alangionoside E	*A. premnifolium*	Leaves	[31]
190	Alangionoside F	*A. premnifolium*	Leaves	[31]
191	Plucheoside B	*A. premnifolium*	Leaves	[31]
192	Alangionoside G	*A. premnifolium*	Leaves	[32]
		A. chinense	Roots	[6]
193	Alangionoside H	*A. platanifolium*	Leaves	[29]
		A. premnifolium	Leaves	[32]
194	Alangionoside I	*A. premnifolium*	Leaves	[32]
195	Alangionoside J	*A. premnifolium*	Leaves	[32]
196	Alangionoside K	*A. premnifolium*	Leaves	[32]
197	Alangionoside L	*A. premnifolium*	Leaves	[32]
198	Alangionoside M	*A. premnifolium*	Leaves	[32]
199	(6*R*,9*R*)-3-oxo-*α*-ionol *β*-D-apiofuranosyl(1→6)-*β*-D-glucopyranoside	*A. premnifolium*	Leaves	[32]
		A. chinense	Leaves	[2]
200	Alangionoside N	*A. premnifolium*	Leaves	[33]

201	Alangionoside O	*A. premnifolium*	Leaves	[33]
202	Linarionoside C	*A. platanifolium*	Leaves	[29]
203	foliasalacioside B1	*A. chinense*	Roots	[6]
204	eleganoside A	*A. chinense*	Roots	[6]
205	Chinenionside A	*A. chinense*	Roots	[2]
206	(6*R*,9*R*)-megastigman-4-en-9-ol-3-one-*O*-*β*-D-(6'-*O*-*β*-D-apiofuranosyl)glucopyranoside	*A. chinense*	Roots	[2]
Lignan glycosides				
207	(2*R*, 3*S*, 4*R*, 1″*R*, 1‴*R*) 6″-*β*-D-xylopyranosyl (+)-lyoniresinol-3a-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
208	(2*R*, 3*S*, 4*S*, 1″*R*, 1‴*R*) 6″-*β*-D-xylopyranosyl (+)-lyoniresinol-3a-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
209	(2*R*,3*R*,4*R*,1″*R*,1‴*R*) 3a-*O*-(*β*-D-xylopyranosyl-(1‴→6″)-*O*-*β*-D-glucopyranosyl)-isolariciresinol	*A. kurzii*	Branches	[3]
210	Burselignan	*A. kurzii*	Branches	[3]
211	(−)-4-epi-lyoniresinol-3a-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
212	(2*S*,3*R*,4*R*)-burselignan-3a-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
213	(2*S*,3*R*,4*R*)-3a-[(*β*-D-glucopyranosyl)oxy]lyoniresinol	*A. kurzii*	Branches	[3]
214	(2*R*,3*R*,4*R*,1″*R*,1‴*R*)-2a-*O*-*β*-D-apiofuranosyl-3a-*O*-*β*-D-glucopyranosyl-isolariciresinol	*A. kurzii*	Branches	[3]
215	(7′*S*, 8′*R*, 8*R*, 1″*R*, 1‴*R*)-6″-*β*-D-apiofuranosyl lariciresinol 9′-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
216	(7′*S*,8′*R*,8*R*,1″*R*,1‴*R*)-6″-*β*-D-apiofuranosyl-5′-methoxylari-ciresinol 9′-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
217	Lariciresion-4-*O*-*β*-D-glucoside	*A. kurzii*	Branches	[3]
218	(±)-5,5′-dimethoxylariciresinol-4-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]

219	(7′*S*,8′*R*,1″*R*,1‴*R*)2″-*β*-D-apiofuranosyl-5′-methoxyl-dihydrodehydroconiferyl alcohol-4′-*O*-*β*-D-glucopyranoside	*A. kurzii*	Branches	[3]
220	(7*S*,8*R*)-glehlinoside H	*A. alpinum*	Stems	[23]
221	(7*R*,8*S*)-glehlinoside H	*A. alpinum*	Stems	[23]
222	(+)-isolariciresinol 3a-*O*-*β*-D-glucopyranoside	*A. chinense*	Roots	[2]
		A. premnifolium	Stems	[36]
223	(-)-lyoniresinol 3a-*O*-*β*-D-glucopyranoside	*A. premnifolium*	Stems	[36]
224	(+)-lyoniresinol 3a-*O*-*β*-D-glucopyranoside	*A. chinense*	Roots	[2]
		A. premnifolium	Stems	[36]
225	(7*S*,8*R*)-urolignoside	*A. chinense*	Roots	[2]
227	Alangiplatanoside	*A. platanifolium*	Stem barks	[35]
228	Alangilignoside A	*A. premnifolium*	Stems	[36]
229	Alangilignoside C	*A. premnifolium*	Stems	[36]
230	Alangilignoside D	*A. premnifolium*	Stems	[36]
Other glycosides				
226	5*β*,6*β*-dihydroxycyclohex-2-en-1-ol 1-*β*-glucoside	*A. platanifolium*	Root bark	[66]
231	Benzyl alcohol *β*-D-glucopyranosyl-(1→2)-[*β*-D-xylopyranosyl-(1→6)]-*β*-D-glucopyranoside	*A. chinense*	Leaves	[95]
232	Benzyl alcohol *β*-D-xylopyranosyl-(1→6)-*β*-D-glucopyranoside	*A. chinense*	Leaves	[95]
233	Isoconiferin	*A. kurzii*	Branches	[3]
234	Sitosterol 3-O-*β*-D-glucopyranoside	*A. platanifolium*	Root bark	[66]

235	Secologanoside	*A. lamarckii*	Fruits	[78]
236	*β*-D-fructofuranosyl(1→4)-*α*-D-fructopyranoside	*A. platanifolium*	Root bark	[66]
237	Kaempferol 3-*O*-*β*-D-glucopyranoside	*A. salviifolium*	Leaves	[27]
238	Sweroside	*A. lamarckii*	Fruits	[78]
239	6'-*O*-*α*-D-glucopyranosylloganic acid	*A. lamarckii*	Fruits	[78]
240	Loganic acid	*A. lamarckii*	Fruits	[78]
		A. chinense	Roots	[2]
		A. salviifolium	Stems	[52]
		A. longiflorum	Leaves	[41]
241	7-*O*-*E*-feruloylloganic acid	*A. platanifolium*	Stem bark	[35]
242	7-*O*-*Z*-feruloylloganic acid	*A. platanifolium*	Stem bark	[35]
243	Kaempferol-3-*O*-[2-*O*-(*β*-D-glucopyranosyl)-*β*-D-galactopyranoside]	*A. kurzii*	Leaves	[77]
244	Kaempferol-3-*O*-[2-*O*-(*β*-D-xylopyranosyl)-*β*-D-galactopyranoside]	*A. kurzii*	Leaves	[77]
245	Alangicadinoside H	*A. premnifolium*	Stems	[99]
246	Alangicadinoside I	*A. premnifolium*	Stems	[99]
247	Quercetin-3-*O*-[2-*O*-(*β*-D-xylopyranosyl)-*β*-D-galactopyranoside]	*A. kurzii*	Leaves	[77]
248	Kaempferol-3-*O*-*β*-D-(2″,6″-di-*α*-L-rhamnopyranosyl)glucopyranoside	*A. premnifolium*	Leaves	[101]
249	3′-methoxykaempferol-3-*O*-*β*-D-(2″,6″-di-*α*-L-rhamnopyranosyl) galactopyranoside	*A. premnifolium*	Leaves	[101]
250	Shimaurinoside A	*A. premnifolium*	Leaves	[33]
251	Shimaurinoside B	*A. premnifolium*	Leaves	[33]
252	Alangisesquin C	*A. premnifolium*	Stems	[99]

253	Alangisesquin D	*A. premnifolium*	Stems	[99]
254	Alangisesquin A	*A. premnifolium*	Stems	[99]
255	Alangisesquin B	*A. premnifolium*	Stems	[99]
256	10-*O*-benzoyladoxosidic acid	*A. kurzii*	Leaves	[77]
257	Kaempferol-3-*O*-[2,6-di-*O*-(*α*-L-rhamnopyranosyl)-*β*-D-galactopyranoside]	*A. kurzii*	Leaves	[77]
		A. premnifolium	Leaves	[101]
258	Guaiacylglycerol 9-*O*-glucopyranoside	*A. premnifolium*	Leaves	[96]
259	Guaiacylglycerol 8-*O*-glucopyranoside	*A. premnifolium*	Leaves	[96]
260	Methoxyguaiacylglycerol 9-*O*-glucopyranoside	*A. premnifolium*	Leaves	[96]
261	4-Methoxyguaiacylglycerol 8-*O*-glucopyranoside	*A. premnifolium*	Leaves	[96]
262	benzyl alcohol *O*-(2'-*O*-*β*-apiofuranosyl, 6'-*O*-*β*-xylopyranosyl)-*β*-glucopyranoside	*A. premnifolium*	Leaves	[96]
263	benzyl alcohol *O*-(2'-*O*-*β*-apiofuranosyl, 3'-*O*-*β*-glucopyranosyl)-*β*-glucopyranoside.	*A. premnifolium*	Leaves	[96]
264	2-Hydroxybenzyl alcohol *β*-D-xylopyranosyl-(1→6)-*β*-D-glucopyranoside	*A. premnifolium*	Leaves	[96]
265	Nicotoflorin	*A. platanifolium*	Leaves	[102]
266	Kaempferol 3-*O*-neohesperidoside	*A. platanifolium*	Leaves	[102]
267	Quercetin 3-*O*-dirhamnopyranosylglucoside	*A. platanifolium*	Leaves	[102]
268	7-*O*-benzoylloganic acid	*A. platanifolium*	Leaves	[34]
269	Quercetin-3-*O*-*β*-D-glucoside	*A. platanifolium*	Leaves	[34]
270	Rutin	*A. platanifolium*	Leaves	[34]
271	Phenethyl alcohol xylopyranosyl(l→6)glucopyranoside	*A. platanifolium*	Leaves	[103]
272	*Z*-hex-3-en-l-ol (aobaalcohol) xylopyranosyl(1→6)glucopyranoside	*A. platanifolium*	Leaves	[103]

273	3-*O*-*β*-D-glucopyranosyl-(24*β*)-ethylcholesta-5,22,25-triene	*A. salviifolium*	Flowers	[91]
Terpenoids				
Sesquiterpenes				
274	3*S*,4*R*,5*S*,8*R*,10*R*-tetrahydroperezinone	*A. chinense*	Roots	[19]
275	(1*S*)-1-methoxylacinilene C	*A. chinense*	Roots	[19]
276	Lacinilene C	*A. chinense*	Roots	[19]
		A. salviifolium	Stems	[40]
277	14-aldehyde-2,7-dihydroxycadalene	*A. chinense*	Roots	[19]
278	Methyl ester of 14-carbonyl-2,7-dihydroxycadalene	*A. chinense*	Roots	[19]
279	7-hydroxycadalene	*A. chinense*	Roots	[19]
280	2,7-dihydroxycadalene	*A. chinense*	Roots	[19]
281	Mansonone E	*A. chinense*	Roots	[19]
		A. salviifolium	Stems	[40]
282	Mansonone H	*A. chinense*	Roots	[19]
		A. salviifolium	Stems	[40]
283	Mansonone C	*A. chinense*	Roots	[19]
284	(1*S*,4*R*)-7,8-dihydroxycalamenene	*A. chinense*	Roots	[19]
285	(11*S*)-6-hydroxy-5-(11-hydroxypropan-12-yl)-3,8-dimethyl-2*H*-chromen-2-one	*A. chinense*	Roots	[6]
286	3*S*,4*R*,5*S*,8*S*,10*S*-tetrahydroperezinone	*A. chinense*	Roots	[6]
287	3*S*,4*R*,5*S*,8*S*,10*S*,11*R*-12-hydroxy-tetrahydroperezinone	*A. chinense*	Roots	[6]
288	(5*S*,8*R*)-2-hydroxy-3,8-dimethyl-5-vinyl-5,6,7,8-tetrahydronaphthalene-1,4-dione	*A. chinense*	Roots	[6]

289	Mansorin I	*A. chinense*	Roots	[6]
290	(1*S*, 4*S*)-7-hydroxycalamenene	*A. chinense*	Roots	[2]
291	(1*R*, 4*S*)-7-hydroxycalamenene	*A. chinense*	Roots	[2]
292	7-hydroxy-4-isopropyl-6-methylnaphthalene-1,2-dione	*A. alpinum*	Stems	[23]
293	(10*S*)-lacinilene C	*A. alpinum*	Stems	[23]
294	(10*S*)-10-methoxylacinilene C	*A. alpinum*	Stems	[23]
295	2,7-dihydroxycadalene	*A. alpinum*	Stems	[23]
296	2,7-dihydroxy-6-methyl-4-(1-methylethyl)-1-naphthalenecarboxaldehyde	*A. alpinum*	Stems	[23]
297	2,7-dihydroxy-6-methyl-4-(1-methylethyl)-1-naphthalenecarboxylic acid methyl ester	*A. alpinum*	Stems	[23]
298	(−)-7, 8-dihydroxycalamenal	*A. salviifolium*	Roots	[38]
299	Alangene A	*A. salviifolium*	Stems	[40]
300	Alangene B	*A. salviifolium*	Stems	[40]
301	Alangene C	*A. salviifolium*	Stems	[40]
302	Alangene D	*A. salviifolium*	Stems	[40]
303	Alangene E	*A. salviifolium*	Stems	[40]
304	Alangene F	*A. salviifolium*	Stems	[40]
305	Alangene G	*A. salviifolium*	Stems	[40]
306	Mansonone G	*A. salviifolium*	Stems	[40]
309	Dehydrooxoperezinone	*A. salviifolium*	Stems	[40]
Norditerpenoids				
307	(2*S*,7*S*,11*S*)-(8*E*,12*Z*)-2,10-dihydroxy-pellialactone	*A. chinense*	Roots	[6]

308	(2*S*,4*S*,7*S*,11*S*)-(8*E*,12*Z*)-2,4,10-trihydroxy-pellialactone	*A. chinense*	Roots	[6]
Triterpenes				
310	Isoalangidiol	*A. lamarckii*	Leaves	[42]
311	Alangidiol	*A. lamarckii*	Leaves	[42]
312	3*α*-*trans*-sinapoyloxy-16*β*-hydroxylup-20(29)-ene	*A. longiflorum*	Leaves	[41]
313	Betulinic acid	*A. lamarckii*	Seeds	[43]
314	27-*O*-*trans*-caffeoylcylicodiscic acid	*A. salviifolium*	Stems	[24]
315	Myriceric acid B	*A. salviifolium*	Stems	[24]
316	(23*E*)-coumaroylhederagenin	*A. chinense*	Stems	[39]
317	(23*Z*)-coumaroylhederagenin	*A. chinense*	Stems	[39]
318	(3*E*,23*E*)-3-caffeoyl-23-coumaroylhederagenin	*A. chinense*	Stems	[39]
319	(3*E*,23*E*)-dicoumaroylhederagenin	*A. chinense*	Stems	[39]
320	Betulinaldehyde	*A. lamarckii*	Seeds	[43]
321	Botulin	*A. lamarckii*	Seeds	[43]
322	Lupeol	*A. lamarckii*	Seeds	[43]
323	Isodeoxyemmolactone	*A. villosum*	barks	[44]
Megastigmane Monoterpenes				
324	(6*S*, 9*R*)-vomifoliol	*A. chinense*	Roots	[6]
325	(6*S*, 9*S*)-vomifoliol	*A. chinense*	Roots	[6]
326	(+)-*S*-dehydrovomifoliol	*A. chinense*	Roots	[6]
327	megastigm-5-ene-3,9-diol	*A. chinense*	Roots	[6]

328	(6*S*, 9*S*)-dihydrovomifoliol	*A. chinense*	Roots	[6]
329	3-oxo-7,8-dihydro-*α*-ionol	*A. chinense*	Roots	[6]
330	3-oxo-*α*-ionol	*A. chinense*	Roots	[6]
331	(6*Z*, 9*S*)-9-hydroxy-4,6-megastigmadien-3-one	*A. chinense*	Roots	[6]
332	3-hydroxy-4-oxo-7,8-dihydro-*β*-ionol	*A. chinense*	Roots	[6]
333	4-oxo-*β*-cyclo-homogeraniol	*A. chinense*	Roots	[6]
334	3-oxo-*α*-ionone	*A. chinense*	Roots	[6]
335	3-hydroxy-*β*-cyclo-homogeraniol	*A. chinense*	Roots	[6]
336	3-(3′-hydroxybutyl)-2,4,4-trimethylcyclohexa-2,5-dienone	*A. chinense*	Roots	[6]
337	3-hydroxy-*β*-damascone	*A. chinense*	Roots	[6]
338	3-oxo-*β*-ionol	*A. chinense*	Roots	[6]
Other compounds				
339	Myristic acid	*A. salviifolium*	Root bark	[11]
340	Myricyl alcohol	*A. salviifolium*	Root bark	[11]
341	Wikstroemol	*A. kurzii*	Branches	[3]
342	(7*R*,8*R*)-*Threo*-4,7,9,9′-tetrahydroxy-3,5,2′-trimethoxy-8-*O*-4′-neolignan	*A. chinense*	Roots	[62]
343	3, 4′-*O*-dimethylellagic acid	*A. chinense*	Roots	[2]
344	Salicylic alcohol	*A. chinense*	Roots	[2]
345	Vanillin	*A. chinense*	Roots	[2]
346	Gallic acid	*A. chinense*	Roots	[2]
347	Gallincin	*A. chinense*	Roots	[2]

348	Ethyl gallate	*A. chinense*	Roots	[2]
349	*β*-sitosterol	*A. platanifolium*	Root bark	[66]
350	Stigmasterol	*A. platanifolium*	Root bark	[66]
351	Lyoniresinol	*A. premnifolium*	Stems	[36]
352	*α*-tocopherylquinone	*A. longiflorum*	Leaves	[41]
353	(+)-lariciresinol	*A. kurzii*	Branches	[3]
354	(+)-medioresinol	*A. kurzii*	Branches	[3]
355	(+)-pinoresinol	*A. kurzii*	Branches	[3]
356	Syringaresinol	*A. kurzii*	Branches	[3]
357	Kempferol	*A. salviifolium*	Leaves	[27]
358	2,6-dihydroxybenzoic acid	*A. platanifolium*	Leaves	[34, 102]
359	Methyl caffeate	*A. platanifolium*	Leaves	[34]

Table 2. A comprehensive list of the pharmacological activities from the genus *Alangium*

Detail	Extracts/Compounds	Active concentration/dose	In vitro / in vivo	Plant	Reference
Anti-tumor					
Inhibit L1210 leukemia	Total alkaloids of *A. vitiense*	The dose of 30 mg·kg^{-1} has significant activity	*In vivo*	*A. vitiense*	[45]
	Two purified alkaloid sites of *A. vitiense* (ICIG-EORTC1186, ICIG-EORTC1207)	ICIG-EORTC1186 (8 mg·kg^{-1}), ICIG-EORTC1207) (50 mg·kg^{-1}) exerted a borderline activity	*In vivo*	*A. vitiense*	[45]
Inhibit P388 leukemia and Gardner lymphosarcoma.	Two purified alkaloid sites of *A. vitiense* (ICIG-EORTC1186, ICIG-EORTC1207)	ICIG-EORTC1186 (8 mg·kg^{-1}), ICIG-EORTC1207 (50 mg·kg^{-1}) showed significant activity	*In vivo*	*A. vitiense*	[45]

Inhibit glioma stem cells (GSC-18#)	Alangiumine A (**14**)	IC_{50} = 23.0 μM	*In vitro*	*A. chinense*	[20]
Inhibit glioma stem cells (GSC-3#) proliferation	Alangiumine A (**14**)	IC_{50} = 12.8 μM	*In vitro*	*A. chinense*	[20]
Inhibit DHFR	Deoxytubulosine (**44**)	IC_{50} = 30 μM	*In vitro*	*A. lamarckii*	[46]
Inhibit TS	Deoxytubulosine (**44**)	IC_{50} = 40 μM	*In vitro*	*A. lamarckii*	[47]
Inhibit HIF-1	Tubulosine (**43**)	IC_{50} = 50 nM	*In vitro*	*A. longiflorum*	[50]
transcriptional activity	Emetine (**46**)	IC_{50} = 50 nM	*In vitro*	*A. longiflorum*	[50]
Inhibit MCF-7	10-*O*-demethylcephaeline (**61**)	ED_{50} = 0.062 μM	*In vitro*	*A. longiflorum*	[17]
	9-Demethyltubulosine (**65**)	IC_{50} = 0.[illegible]5 ± 0.00 μM	*In vitro*	*A. longiflorum*	[41]
	8-hydroxytubulosine (**89**)	IC_{50} = 0.12 ± 0.04 μM	*In vitro*	*A. longiflorum*	[41]
	The ethanol extract of *A. longiflorum* leaves	IC_{50} = 5.39 ± 2.74 μM	*In vitro*	*A. longiflorum*	[104]
Inhibit A549	10-*O*-demethylcephaeline (**61**)	ED_{50} = 0.013 μM	*In vitro*	*A. longiflorum*	[17]
	8-hydroxyl-cepheline (**67**)	IC_{50} = 3.25 ± 0.15 μM	*In vitro*	*A. salviifolium*	[51]
	$\Delta^{1',2'}$-deoxytubulosine (**68**)	IC_{50} = 12.51 ± 0.55 μM	*In vitro*	*A. salviifolium*	[51]
	10-demethylprotoemetinol (**40**)	IC_{50} = 0.2 μM	*In vitro*	*A. salviifolium*	[52]
	Protoemetinol (**29**)	IC_{50} = 0.3 μM	*In vitro*	*A. salviifolium*	[52]
	Ankorine (**39**)	IC_{50} = 2.1 μM	*In vitro*	*A. salviifolium*	[52]
	Cephaeline (**22**)	IC_{50} = 3.0 μM	*In vitro*	*A. salviifolium*	[52]
	Isocephaeline (**26**)	IC_{50} = 2.7 μM	*In vitro*	*A. salviifolium*	[52]
	Deoxytubulosine (**44**)	IC_{50} = 0.09 μM	*In vitro*	*A. salviifolium*	[52]
	Tubulosine (**43**)	IC_{50} = 2.1 μM	*In vitro*	*A. salviifolium*	[52]
	Alangimarckine (**70**)	IC_{50} = 3.0 μM	*In vitro*	*A. salviifolium*	[52]
	Natalensine (**87**)	IC_{50} = 3.0 μM	*In vitro*	*A. salviifolium*	[52]
	9-Demethyltubulosine (**65**)	IC_{50} = 0.36 ± 0.03 μM	*In vitro*	*A. longiflorum*	[41]
	8-hydroxytubulosine (**89**)	IC_{50} = 0.21 ± 0.01 μM	*In vitro*	*A. longiflorum*	[41]
	The ethanol extract of *A. longiflorum* leaves	IC_{50} = 6.48 ± 2.57μM	*In vitro*	*A. longiflorum*	[104]
Cu^{2+}-dependent DNA	Javaniside (**66**)	10 μM	*In vitro*	*A. javanicum*	[22]

strand scission	Alangiside (**63**)	10 μM	*In vitro*	*A. grisolleoides*	[49]
Inhibited aromatase activity	27-*O*-*trans*-caffeoylcylicodiscic acid (**314**)	$IC_{50} = 4.7\ \mu M$	*In vitro*	*A. salviifolium*	[24]
	Myriceric acid B (**315**)	$IC_{50} = 6.8\ \mu M$	*In vitro*	*A. salviifolium*	[24]
	Mansonone H (**282**)	$IC_{50} = 2.05 \pm 0.46\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Alangene A (**299**)	$IC_{50} = 0.09 \pm 0.05\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Alangene E (**303**)	$IC_{50} = 0.13 \pm 0.03\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Alangene F (**304**)	$IC_{50} = 0.30 \pm 0.07\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Alangene G (**305**)	$IC_{50} = 0.06 \pm 0.01\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Mansonone G (**306**)	$IC_{50} = 1.19 \pm 0.04\ \mu M$	*In vitro*	*A. salviifolium*	[40]
Inhibit MOLT-3	27-*O*-*trans*-caffeoylcylicodiscic acid (**314**)	$IC_{50} = 5.6\ \mu M$	*In vitro*	*A. salviifolium*	[24]
	Myriceric acid B (**315**)	$IC_{50} = 3.9\ \mu M$	*In vitro*	*A. salviifolium*	[24]
	Alangene A (**299**)	$IC_{50} = 7.9 \pm 0.4\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Alangene D (**302**)	$IC_{50} = 2.1 \pm 0.2\ \mu M$	*In vitro*	*A. salviifolium*	[40]
Inhibited HepG2	3-*O*-demethyl-2-*O*-methylalangiside (**88**)	$IC_{50} = 7.1\ \mu M$	*In vitro*	*A. salviifolium*	[24]
Inhibited Hela	8-hydroxyl-cepheline (**67**)	$IC_{50} = 9.21 \pm 0.06\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	$\Delta^{1',2'}$-deoxytubulosine (**68**)	$IC_{50} = 9.18 \pm 0.23\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Tubulosine (**43**)	$IC_{50} = 8.22 \pm 0.29\ \mu M$	*In vitro*	*A. salviifolium*	[40]
	Alangiifoliumine A (**82**)	$IC_{50} = 9.2\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	10-demethylprotoemetinol (**40**)	$IC_{50} = 0.01\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Protoemetinol (**29**)	$IC_{50} = 1.2\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Ankorine (**39**)	$IC_{50} = 5.3\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Cepheline (**22**)	$IC_{50} = 7.6\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Isocephaeline (**26**)	$IC_{50} = 9.4\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Deoxytubulosine (**44**)	$IC_{50} = 0.1\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Alangimarckine (**70**)	$IC_{50} = 8.2\ \mu M$	*In vitro*	*A. salviifolium*	[52]
	Natalensine (**87**)	$IC_{50} = 1.3\ \mu M$	*In vitro*	*A. salviifolium*	[52]
Inhibited SKOV-3	8-hydroxyl-cepheline (**67**)	$IC_{50} = 0.20 \pm 0.00\ \mu M$	*In vitro*	*A. salviifolium*	[51]
	$\Delta^{1',2'}$-deoxytubulosine (**68**)	$IC_{50} = 13.89 \pm 0.54\ \mu M$	*In vitro*	*A. salviifolium*	[51]

	2′-*N*-(1″-Deoxy-1″-*β*-D-fructopyranosyl)cephaeline (**28**)	IC_{50} = 5.16 ± 0.09 *μ*M	*In vitro*	*A. salviifolium*	[51]
	Alangiifoliumine C (**84**)	IC_{50} = 5.2 *μ*M	*In vitro*	*A. salviifolium*	[52]
	10-demethylprotoemetinol (**40**)	IC_{50} = 0.06 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Protoemetinol (**29**)	IC_{50} = 0.1 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Ankorine (**39**)	IC_{50} = 3.6 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Cepheline (**22**)	IC_{50} = 0.1 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Isocephaeline (**26**)	IC_{50} = 3.9 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Deoxytubulosine (**44**)	IC_{50} = 0.003 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Tubulosine (**43**)	IC_{50} = 0.4 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Alangimarckine (**70**)	IC_{50} = 0.2 *μ*M	*In vitro*	*A. salviifolium*	[52]
	Natalensine (**87**)	IC_{50} = 0.[illegible] *μ*M	*In vitro*	*A. salviifolium*	[52]
Inhibited	9-demethyltubulosine (**65**)	IC_{50} = 0.19 ± 0.01 *μ*M	*In vitro*	*A. longiflorum*	[41]
MDA-MB-231	8-hydroxytubulosine (**89**)	IC_{50} = 0.06 ± 0.02 *μ*M	*In vitro*	*A. longiflorum*	[41]
Inhibited KB	9-demethyltubulosine (**65**)	IC_{50} = 0.29 ± 0.01 *μ*M	*In vitro*	*A. longiflorum*	[41]
	8-hydroxytubulosine (**89**)	IC_{50} = 0.09 ± 0.02 *μ*M	*In vitro*	*A. longiflorum*	[41]
Inhibited KB-VIN	8-hydroxytubulosine (**89**)	IC_{50} = 8.90 ± 0.38 *μ*M	*In vitro*	*A. longiflorum*	[41]
Anti-Ehrlich ascites	The crude extract of *A. salviifolium* flowers	10 $mg \cdot kg^{-1}$	*In vivo*	*A. salviifolium*	[105]
carcinoma	The diethylether fraction of *A. salviifolium* flowers	10 $mg \cdot kg^{-1}$	*In vivo*	*A. salviifolium*	[105]
	The chloroform extract of *A. salviifolium* flowers	10 $mg \cdot kg^{-1}$	*In vivo*	*A. salviifolium*	[106]
Antibacterial effect	The methanol extract of *A. salviifolium* flowers	Inhibition circle diameter at 100 $\mu g \cdot disc^{-1}$ concentration = 16 - 26 mm	*In vitro*	*A. salviifolium*	[53]
	The butanol extract of *A. salviifolium* roots	4 $mg \cdot mL^{-1}$	*In vitro*	*A. salviifolium*	[107]
	1-Methyl-1H-pyrimidine-2,4-dione (**98**)	Minimum inhibitory concentration (MIC) = 64 - 128 $\mu g \cdot mL^{-1}$	*In vitro*	*A. salviifolium*	[91]
	3-O-*β*- D-glucopyranosyl-(24*β*)-ethylcholesta-5,22,25-triene (**273**)	MIC = 64 $\mu g \cdot mL^{-1}$	*In vitro*	*A. salviifolium*	[91]
	The decoction of *A. chinense* flowers	MIC = 3.13 - 6.25 $mg \cdot mL^{-1}$	*In vitro*	*A. chinense*	[54]
	The ethanol extract of *A. chinense* flowers	MIC = 12.50 - 50.00 $mg \cdot mL^{-1}$	*In vitro*	*A. chinense*	[54]
Anti-inflammatory effect					
Inhibit paw swelling of	The ethanol extract of *A. chinense* roots	13 $mg \cdot kg^{-1}$	*In vivo*	*A. chinense*	[55]

rats	The water extract of *A. chinense* fibrous roots	5 g·kg^{-1}	*In vivo*	*A. chinense*	[56]
	The chloroform extract of *A. salviifolium* seeds	500 mg·kg^{-1}	*In vivo*	*A. salviifolium*	[5]
	The ethanol extract of *A. salviifolium* seeds	500 mg·kg^{-1}	*In vivo*	*A. salviifolium*	[5]
	The water extract of *A. salviifolium* seeds	500 mg·kg^{-1}	*In vivo*	*A. salviifolium*	[5]
	The methanol extract of *A. salviifolium* flowers	50 mg·kg^{-1}	*In vivo*	*A. salviifolium*	[59]
	The chloroform extract of *A. salviifolium* flowers	100 mg·kg^{-1}	*In vivo*	*A. salviifolium*	[59]
	The methanol extract of *A. salvifolium* roots	100 mg·kg^{-1}	*In vivo*	*A. salviifolium*	[60]
Lower the AI of AA rats	The ethanol extract of *A. chinense* root	13 mg·kg^{-1}	*In vivo*	*A. chinense*	[55]
	Total alkali of *A. chinense* root	3 mg·kg^{-1}	*In vivo*	*A. chinense*	[55]
	The water extract of *A. chinense* fibrous roots	5 g·kg^{-1}	*In vivo*	*A. chinense*	[56]
Reduce TNF-α	The water extract of *A. chinense* fibrous roots	5 g·kg^{-1}	*In vivo*	*A. chinense*	[56]
	Chinenside A (**123**)	5 μM	*In vitro*	*A. chinense*	[2]
	Chinenside B (**124**)	20 μM	*In vitro*	*A. chinense*	[2]
	Henryoside (**119**)	20 μM	*In vitro*	*A. chinense*	[2]
	6′-*O*-β-D-glucopyranosylhenryoside (**118**)	50 μM	*In vitro*	*A. chinense*	[2]
	Salicin (**116**)	20 μM	*In vitro*	*A. chinense*	[2]
	Gentisic acid-5-*O*-β-D- glucoside (**127**)	20 μM	*In vitro*	*A. chinense*	[2]
	Isotachioside (**128**)	5 μM	*In vitro*	*A. chinense*	[2]
	Tachioside (**129**)	20 μM	*In vitro*	*A. chinense*	[2]
	Gallic acid-3-*O*-β-D-glucoside (**130**)	50 μM	*In vitro*	*A. chinense*	[2]
	Methyl salicylate-6-*O*-β-D-glucopyranosylbenzoic acid (**131**)	50 μM	*In vitro*	*A. chinense*	[2]
	Glucosyringic acid (**132**)	5 μM	*In vitro*	*A. chinense*	[2]
	Salviifoside B (**141**)	25 μM	*In vitro*	*A. salviifolium*	[27]
Reduce IL-1β	The water extract of *A. chinense* fibrous roots	5 g·kg^{-1}	*In vitro*	*A. chinense*	[56]
	Chinenside A (**123**)	5 μM	*In vitro*	*A. chinense*	[2]
	Henryoside (**119**)	50 μM	*In vitro*	*A. chinense*	[2]
	6′-*O*-β-D-glucopyranosylhenryoside (**118**)	5 μM	*In vitro*	*A. chinense*	[2]
	Salicin (**116**)	5 μM	*In vitro*	*A. chinense*	[2]
	Gentisic acid-5-*O*-β-D- glucoside (**127**)	20 μM	*In vitro*	*A. chinense*	[2]

	Isotachioside (**128**)	20 μM	*In vitro*	*A. chinense*	[2]
	Gallic acid-3-*O*-*β*-D-glucoside (**130**)	50 μM	*In vitro*	*A. chinense*	[2]
	Methyl salicylate-6-*O*-*β*-D-glucopyranosylbenzoic acid (**131**)	50 μM	*In vitro*	*A. chinense*	[2]
	Glucosyringic acid (**132**)	50 μM	*In vitro*	*A. chinense*	[2]
Increase OPG mRNA expression and reduce RANKL and RANK mRNA expression	The water extract of *A. chinense* fibrous roots	5 $g\cdot kg^{-1}$	*In vivo*	*A. chinense*	[56]
Inhibit the production of NO	Chinenside A (**123**)	5 μM	*In vitro*	*A. chinense*	[2]
	Chinenside B (**124**)	20 μM	*In vitro*	*A. chinense*	[2]
	Henryoside (**119**)	50 μM	*In vitro*	*A. chinense*	[2]
	6′-*O*-*β*-D-glucopyranosylhenryoside (**118**)	50 μM	*In vitro*	*A. chinense*	[2]
	Salicin (**116**)	[illegible]0 μM	*In vitro*	*A. chinense*	[2]
	Vanilloloside (**125**)	20 μM	*In vitro*	*A. chinense*	[2]
	2-hydroxy-3-*O*-*β*-D-glucopyranosylbenzoic acid (**126**)	5 μM	*In vitro*	*A. chinense*	[2]
	Gentisic acid-5-*O*-*β*-D- glucoside (**127**)	50 μM	*In vitro*	*A. chinense*	[2]
	Isotachioside (**128**)	5 μM	*In vitro*	*A. chinense*	[2]
	Methyl salicylate-6-*O*-*β*-D-glucopyranosylbenzoic acid (**131**)	20 μM	*In vitro*	*A. chinense*	[2]
	Glucosyringic acid (**132**)	5 μM	*In vitro*	*A. chinense*	[2]
	Salviifoside A (**140**)	50 μM	*In vitro*	*A. salviifolium*	[27]
	Salviifoside B (**141**)	5 μM	*In vitro*	*A. salviifolium*	[27]
	Salviifoside C (**142**)	25 μM	*In vitro*	*A. salviifolium*	[27]
	The alcohol extract of *A. lamarckii* leaves	IC_{50} = 245.40 ± 1.33 $\mu g\cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
Inhibit the production of PGE_2	Chinenside A (**123**)	50 μM	*In vitro*	*A. chinense*	[2]
	Chinenside B (**124**)	50 μM	*In vitro*	*A. chinense*	[2]
	Henryoside (**119**)	20 μM	*In vitro*	*A. chinense*	[2]
	6′-*O*-*β*-D-glucopyranosylhenryoside (**118**)	5 μM	*In vitro*	*A. chinense*	[2]
	Salicin (**116**)	50 μM	*In vitro*	*A. chinense*	[2]
	Gentisic acid-5-*O*-*β*-D- glucoside (**127**)	50 μM	*In vitro*	*A. chinense*	[2]

	Isotachioside (**128**)	5 μM	*In vitro*	*A. chinense*	[2]
	Tachioside (**129**)	50 μM	*In vitro*	*A. chinense*	[2]
	Gallic acid-3-*O*-β-D-glucoside (**130**)	50 μM	*In vitro*	*A. chinense*	[2]
	Glucosyringic acid (**132**)	50 μM	*In vitro*	*A. chinense*	[2]
	Salviifoside A (**140**)	25 μM	*In vitro*	*A. salviifolium*	[27]
	Salviifoside B (**141**)	25 μM	*In vitro*	*A. salviifolium*	[27]
	Salviifoside C (**142**)	25 μM	*In vitro*	*A. salviifolium*	[27]
Inhibit the production of IL-6	Chinenside A (**123**)	50 μM	*In vitro*	*A. chinense*	[2]
	Chinenside B (**124**)	20 μM	*In vitro*	*A. chinense*	[2]
	Henryoside (**119**)	50 μM	*In vitro*	*A. chinense*	[2]
	6′-*O*-β-D-glucopyranosylhenryoside (**118**)	5 μM	*In vitro*	*A. chinense*	[2]
	Salicin (**116**)	50 μM	*In vitro*	*A. chinense*	[2]
	2-hydroxy-3-*O*-β-D-glucopyranosylbenzoic acid (**126**)	[illegible]0 μM	*In vitro*	*A. chinense*	[2]
	Gentisic acid-5-*O*-β-D-glucoside (**127**)	20 μM	*In vitro*	*A. chinense*	[2]
	Isotachioside (**128**)	5 μM	*In vitro*	*A. chinense*	[2]
	Tachioside (**129**)	50 μM	*In vitro*	*A. chinense*	[2]
	Gallic acid-3-*O*-β-D-glucoside (**130**)	50 μM	*In vitro*	*A. chinense*	[2]
Anti-oxidant effect					
Inhibited the formation of superoxide anion radical	Alangiside (**63**)	IC_{50} = 19.4 μM	*In vitro*	*A. salviifolium*	[24]
	Demethylalangiside (**64**)	IC_{50} = 5.3 μM	*In vitro*	*A. salviifolium*	[24]
Inhibits lipid peroxidation of rat liver microsomes	(7*R*,8*R*)-*Threo*-4,7,9,9′-tetrahydroxy-3,5,2′-trimethoxy-8-*O*-4′-neolignan (**342**)	IC_{50} = 8.18 μM	*In vitro*	*A. chinense*	[62]
	(1*S*)-1-methoxylacinilene C (**275**)	IC_{50} = 23.8 μM	*In vitro*	*A. chinense*	[19]
	14-aldehyde-2,7-dihydroxycadalene (**277**)	IC_{50} = 14.7 μM	*In vitro*	*A. chinense*	[19]
	Methyl ester of 14-carbonyl-2,7-dihydroxycadalene (**278**)	IC_{50} = 4.9 μM	*In vitro*	*A. chinense*	[19]
	8-hydroxy-3,6,9-trimethyl-7H-benzo[*de*]quinolin-7-one (**6**)	IC_{50} = 3.9 μM	*In vitro*	*A. chinense*	[19]
	Lacinilene C (**276**)	IC_{50} = 39.8 μM	*In vitro*	*A. chinense*	[19]
	7-hydroxycadalene (**279**)	IC_{50} = 4.3 μM	*In vitro*	*A. chinense*	[19]

	2,7-dihydroxycadalene (**280**)	IC_{50} = 3.8 μM	*In vitro*	*A. chinense*	[19]
	Mansonone E (**281**)	IC_{50} = 45.7 μM	*In vitro*	*A. chinense*	[19]
	Mansonone H (**282**)	IC_{50} = 17.8 μM	*In vitro*	*A. chinense*	[19]
Scavenged DPPH free radicals	27-*O*-*trans*-caffeoylcylicodiscic acid (**314**)	IC_{50} = 21.4 μM	*In vitro*	*A. salviifolium*	[24]
	Myriceric acid B (**315**)	IC_{50} = 21.8 μM	*In vitro*	*A. salviifolium*	[24]
	Demethylalangiside (**64**)	IC_{50} = 24.0 μM	*In vitro*	*A. salviifolium*	[24]
	The methanol extract of *A. salviifolium* barks	IC_{50} = 20.85 $\mu g \cdot mL^{-1}$	*In vitro*	*A. salviifolium*	[61]
	The chloroform extract of *A. salviifolium* flowers	IC_{50} = 182.31 ± 0.31 $\mu g \cdot mL^{-1}$	*In vitro*	*A. salviifolium*	[106]
	The alcohol extract of *A. lamarckii* leaves	IC_{50} = 159.32 ± 1.8[illegible] $\mu g \cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
	The ethyl acetate extract of *A. lamarckii* leaves	IC_{50} = 160.66 ± 2.6[illegible] $\mu g \cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
Scavenged hydrogen peroxide	The alcohol extract of *A. lamarckii* leaves	IC_{50} = 20[illegible].43 ± 3.04 $\mu g \cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
	The ethyl acetate extract of *A. lamarckii* leaves	IC_{50} = 230.[illegible]7 ± 2.49 $\mu g \cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
Others					
Scavenged deoxyribose	The alcohol extract of *A. lamarckii* leaves	IC_{50} = 216.57 ± 1.04 $\mu g \cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
	The ethyl acetate extract of *A. lamarckii* leaves	IC_{50} = 257.70 ± 0.57 $\mu g \cdot mL^{-1}$	*In vitro*	*A. lamarckii*	[108]
Anti Coxsackie virus B3	14-aldehyde-2,7-dihydroxycadalene (**277**)	IC_{50} = 1.4 μM	*In vitro*	*A. chinense*	[19]
	Methyl ester of 14-carbonyl-2,7-dihydroxycadalene (**278**)	IC_{50} = 11.3 μM	*In vitro*	*A. chinense*	[19]
	4,5-dimethoxycanthin-6-one (**7**)	IC_{50} = 7.4 μM	*In vitro*	*A. chinense*	[19]
	Lacinilene C (**276**)	IC_{50} = 15.4 μM	*In vitro*	*A. chinense*	[19]
	7-hydroxycadalene (**279**)	IC_{50} = 5.3 μM	*In vitro*	*A. chinense*	[19]
	2,7-dihydroxycadalene (**280**)	IC_{50} = 10.1 μM	*In vitro*	*A. chinense*	[19]
	Mansonone E (**281**)	IC_{50} = 4.7 μM	*In vitro*	*A. chinense*	[19]
	Mansonone H (**282**)	IC_{50} = 3.1 μM	*In vitro*	*A. chinense*	[19]
	(1*S*,4*R*)-7,8-dihydroxycalamenene (**284**)	IC_{50} = 7.4 μM	*In vitro*	*A. chinense*	[19]
	(2*S*,7*S*,11*S*)-(8*E*,12*Z*)-2, 10-dihydroxy-pellialactone (**307**)	IC_{50} = 38.5 μM	*In vitro*	*A. chinense*	[6]
	3-hydroxy-β-damascone (**337**)	IC_{50} = 41.9 μM	*In vitro*	*A. chinense*	[6]
Reduced blood glucose	The ethanol extract of *A. salvifolium* roots	100 - 500 $mg \cdot kg^{-1}$	*In vivo*	*A. salvifolium*	[109]
	The methanol extract of *A. salvifolium* leaves	400 $mg \cdot kg^{-1}$	*In vivo*	*A. salvifolium*	[110]
	The methanol extract of *A. salviifolium* bark	700 $mg \cdot kg^{-1}$	*In vivo*	*A. salvifolium*	[111]

	The chloroform extract of *A. salviifolium* seeds	500 mg·kg^{-1}	*In vivo*	*A. salvifolium*	[5]
	The ethanol extract of *A. salviifolium* seeds	500 mg·kg^{-1}	*In vivo*	*A. salvifolium*	[5]
	The aqueous extract of *A. salviifolium* seeds	500 mg·kg^{-1}	*In vivo*	*A. salvifolium*	[5]
	The alcohol extract of *A. lamarckii* leaves	500 mg·kg^{-1}	*In vivo*	*A. lamarckii*	[112]
Inhibited aldose reductase (AR) of rat lens	The alcohol extract of *A. lamarckii* leaves	IC_{50} = 106.00 ± 5.11 μg·mL^{-1}	*In vitro*	*A. lamarckii*	[69]

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Highlights

- This review presented a systematic review on genus *Alangium* in the period of 1965–2020
- A detailed description of traditional usage
- Including the structures of more than 300 isolated compounds
- The comprehensive summary of medicinal parts and activities data.