

Occurrence of Phytoecdysteroids in Plant Species

Fam. Aizoaceae

Sesuvium portulacastrum L.
20-Hydroxyecdysone [1]

Trianthema galericulata
2-Deoxy- α -ecdysone [2]
2-Deoxy-20-hydroxyecdysone [2]
Ecdysone [2]
20-Hydroxyecdysone [2]

T. portulacastrum L.
20-Hydroxyecdysone [1]

References

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Fam. Amaranthaceae

Achyranthes aspera L.
20-Hydroxyecdysone [1–3]

A. bidentata Blume
Achyranthesterone A [4]
Ecdysone [4]
20-Hydroxyecdysone [5]
Inokosterone [5–7]
Polypodine B [4]
Stachysterone D [4]

A. fauriei Thunb
20-Hydroxyecdysone [5, 8]
5 α -20-Hydroxyecdysone [5]
Inokosterone [5–7]
Rubrosterone [5]

A. japonica Nakai
20-Hydroxyecdysone [5, 9]
Inokosterone [5–7]

A. japonica var. *hachijoensis* Honda
20-Hydroxyecdysone [5]
Inokosterone [5–7]

A. longifolia Makino
20-Hydroxyecdysone [5]
Inokosterone [5–7]

A. mollicula Nakai
20-Hydroxyecdysone [5]

A. obtusifolia Lamarck
20-Hydroxyecdysone [5, 10]
Rubrosterone [5]

A. ogatai Yamamoto
20-Hydroxyecdysone [5]

A. rubrofusca Wight
20-Hydroxyecdysone [5, 11]
Inokosterone [5–7]
Rubrosterone [12]

Aerva tomentosa Forsk
20-Hydroxyecdysone [13]

Bosea yervamora L.
20-Hydroxyecdysone [14]

Cyathula capitata Moquin-Tandon
Amarasterone A [15]
Amarasterone B [15]
Capitasterone [16]
Cyasterone [17, 18]
5-Epicyasterone [19]
28-Epicyasterone [20]
Isocyasterone [19, 21]
Poststerone [22]
Precyasterone [23]
Sengosterone [24, 25]

C. officinalis Hikino
Cyasterone [20]
Cyasterone-2,3-acetonide [26]
28-Epi-isocyasterone [20]

24-Hydroxycysterone [26]

Isocysterone-2,3-acetonide [26]

C. prostrata Blume

20-Hydroxyecdysone [9, 27]

Froelichia floridana (Nutt.) Moq.

Achyranthesterone A [28]

Blechnoside B [28]

2-Dehydro-3-epi-20-hydroxyecdysone [29, 30]

2,22-Deoxyecdysone-25-glucoside [28]

2,22-Dideoxy-20-hydroxyecdysone-25-glucoside [28]

2,22-Dideoxyecdysone-25-O- β -D-glycopyranosyl-

(1 \rightarrow 2)- β -D-glucopyranoside [28]

(5 α)-2,22-Dideoxyecdysone-25-O- β -D-glycopyranosyl-(1 \rightarrow 2)- β -D-glucopyranoside [28]

2,22-Dideoxy-5-hydroxyecdysone-25-O- β -D-glycopyranosyl-(1 \rightarrow 2)- β -D-glucopyranoside [28]

20-Hydroxyecdysone [28]

Gomphrena affinis F. Muell ex Benth

Pterosterone [31]

G. celosiodes Mart

20-Hydroxyecdysone [1]

G. haageana Klotzsch

20-Hydroxyecdysone [32]

Pterosterone [31]

Pandiaka involucrate

20-Hydroxyecdysone [13]

Pfaffia iresinoides Spreng

20-Hydroxyecdysone [33, 34]

20-Hydroxyecdysone-25-glucoside [34]

Podecdysone B [34]

Podecdysone B-25- β -D-glucoside [34]

Pterosterone [33, 34]

Pterosterone-24- β -D-glucoside [34]

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Fam. Aspidiaceae

Athyrium yokoscense Christ
Ecdysone [1]
24-Epipterosterone [1]
20-Hydroxyecdysone [1]

A. nipponicum (Mett.) Hance
20-Hydroxyecdysone [2]
Ponasterone A [3, 4]
Pterosterone [2]

Diplazium donianum Tardieu-Blot
Makisterone A [5]
Makisterone D [5]

D. sibiricum
20-Hydroxyecdysone [6]

Lastrea japonica Copeland
20-Hydroxyecdysone [2, 3, 7]

L. thelypteris Bory
20-Hydroxyecdysone [3, 7]
Pterosterone [7]

Matteuccia struthiopteris (L.) Tod
20-Hydroxyecdysone [8]
Ponasterone A [8]
Pterosterone [2]

Onoclea sensibilis L.
20-Hydroxyecdysone [3, 8, 9]
Ponasterone A [3]
Pterosterone [7]

Struthiopteris nipponica Nakai
20-Hydroxyecdysone [9]
Ponasterone A [10]

Tectaria sp.
Ecdysone [11]
20-Hydroxyecdysone [11]

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Fam. Blechnaceae

Blechnum amabile Makino
20-Hydroxyecdysone [1]
Ponasterone A [1, 2]

B. minus (R. Br.) Ettingsh
Blechnoside B [3]
2-Deoxy- α -ecdysone [3–5]
2-Deoxy-20-hydroxyecdysone [5]
Ecdysone [3–5]
20-Hydroxyecdysone [3]
Ponasterone A [4]
Silenoside E (Blechnoside A) [3]

B. nigrum
20-Hydroxyecdysone [4]

B. nipponicum Makino

20-Hydroxyecdysone [1]

Ponasterone A [1, 2]

Shidasterone (Stachysterone D) [2, 6]

B. penna-marina

2-Deoxy- α -ecdysone [3–5]

2-Deoxy-20-hydroxyecdysone [4]

Ecdysone [3–5]

20-Hydroxyecdysone [3]

Ponasterone A [4]

B. spicant L.

Ecdysone [7]

20-Hydroxyecdysone [7]

B. vulcanicum

2-Deoxy- α -ecdysone [3–5]

Ecdysone [3–5]

3-Epi-2-deoxyecdysone [4]

Doodia aspera R. Br

20-Hydroxyecdysone [8]

Stenochlaena polustrus (Burn) Bedd

20-Hydroxyecdysone [8]

Woodwardia japonica (L.) Smith

Inokosterone [9]

Ponasterone A [9]

W. orietalis var. *formosana* Ros

Inokosterone [9]

Ponasterone A [9]

W. takeoi Hayata

Inokosterone [9]

Ponasterone A [9]

W. unigemmata (Mak.) Nakai

Inokosterone [9]

Ponasterone A [9]

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Fam. Cactaceae

Wilcoxia viperina (Weber)

Deoxyviperidone [1]

Viperidone [1]

Peniocereus greggi

2,14,22,25-Tetraoxyecdysone [2]

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Fam. Caryophyllaceae

Coronaria coreacea (Molnch.) Schischk. ex Forschk

20-Hydroxyecdysone [1]

Viticosterone E [1]

C. flos-cuculi L.

2-Deoxy-20-hydroxyecdysone [2]

20,26-Dihydroxyecdysone [2]

Ecdysone [2]
20-Hydroxyecdysone [2]
Polypodine B [2]
Taxisterone [2]

Cucubalis baccifer L.

24(28)-Dehydromakisterone A [3]
2,22-Deoxy-20-hydroxyecdysone-3-glucoside [3]
20-Hydroxyecdysone [3]
25-Hydroxypanuosterone [3]
Rubrosterone [3]
Taxisterone [3]

Dianthus hoeltzeri Winkl

20-Hydroxyecdysone [4]
Polypodine B [4]
Viticosterone E [4]

Elisanthe viscosa (L.) Rupr

20-Hydroxyecdysone [5]

Gastrolychnis apetala (L.) Tolm

20-Hydroxyecdysone [5]

Lychnis arkwrightii Heydt

20-Hydroxyecdysone [6]

L. chalconica L.

24(28)-Dehydromakisterone [6]
Ecdysone [6, 7]
20-Hydroxyecdysone [6, 8, 9]
Integristerone A [6]
Pterosterone [8]
Shidasterone (Stachysterone D) [7]
Viticosterone E [7]

L. cognata Maxim

20-Hydroxyecdysone [6]

L. flos-cuculi L.

2-Deoxy-20-hydroxyecdysone [10]
5 β -Dihydroxyrubrosterone [11]
20-Hydroxyecdysone [11]
20-Hydroxyecdysone-2-acetate [10]
20-Hydroxyecdysone-3-acetate [10, 11]
26-Hydroxypolypodine B [11]
Makisterone A [10]
Polypodine B [11]
Poststerone [10]

Rubrosterone [10]
Taxisterone [10]
Viticosterone E [10]

L. fulgens Fisch. et Curt

Ecdysone [6, 12]
20-Hydroxyecdysone [6, 12]
Polypodine B [6, 12]

L. haageana Zem

20-Hydroxyecdysone [6]
Polypodine B [6]

L. miqueliana Rohrb

24-Epipinnatasterone (24 α -Hydroxy-22-deoxy-20-hydroxyecdysone) [13]
20-Hydroxyecdysone [8, 13]
Inokosterone [8]
Pinnatasterone (24 β -Hydroxy-22-deoxy-20-hydroxyecdysone) [13]
Polypodine B [8, 13]

L. sibirica L.

20-Hydroxyecdysone [6]

L. villosula (Trautv.) Gorschk

20-Hydroxyecdysone [6]

L. wilfordii (Regel) Maxim

24(28)-Dehydromakisterone A [6]
Ecdysone [6]
20-Hydroxyecdysone [6]
Integristerone A [6]
Polypodine B [6]

Melandrium turkestanicum (Rgl.) Vved

20-Hydroxyecdysone [14]
20-Hydroxyecdysone-22-acetate [14]
Integristerone A [14]
Melandrioside A [15]
Polypodine B [14]
Polypodine B-22-acetate [14]

Silene acaulis (L.) Jacq

20-Hydroxyecdysone [16]

S. altaica Pers

20-Hydroxyecdysone [17]
Polypodine B [17]

- S. antirrhina* L.
20-Hydroxyecdysone [18]
Polypodine B [18]
- S. apetala* Willd
20-Hydroxyecdysone [5]
- S. armeria* L.
20-Hydroxyecdysone [5, 17]
- S. bashkirorum* Janish
20-Hydroxyecdysone [19]
- S. bellidifolia* Jussx ex Jacq
20-Hydroxyecdysone [19]
- S. bergiana* Lindm
20-Hydroxyecdysone [5]
- S. borystenica* (Grun.) Walters
20-Hydroxyecdysone [5]
- S. brachypoda* Rouy
20-Hydroxyecdysone [19]
Polypodine B [19]
- S. brahuica* Boiss
Brahuisterone [20]
2-Deoxyecdysone-22-acetate [21]
2-Deoxy- α -ecdysone [22]
2-Deoxy-20-hydroxyecdysone [21]
2-Deoxy-20-hydroxyecdysone-20,22-acetonide [21]
Ecdysone-22-sulfate [23]
20-Hydroxyecdysone [22, 24]
Integristerone A [24]
Integristerone A-25-acetate [25]
Polypodine B [22, 24]
Sileneoside A [24]
Sileneoside B [26]
Sileneoside C [27]
Sileneoside D [28]
Silenoside E (Blechnoside A) [22]
5 α -Silenoside E [29]
Sileneoside F [30]
Sileneoside G [31]
Sileneoside H [32]
Viticosterone E [24]
- S. burchelli* Otth
20-Hydroxyecdysone [33]
- S. campanulata* S. Watson
20-Hydroxyecdysone [33]
Polypodine B [33]
- S. caramanica* Boiss
20-Hydroxyecdysone [33]
Polypodine B [33]
- S. catholica* (L.) Aiton fil
20-Hydroxyecdysone [17]
Polypodine B [5, 17]
- S. caucasica* Boiss
20-Hydroxyecdysone [33, 34]
Polypodine B [33]
- S. chamarensis* Turcz
20-Hydroxyecdysone [35]
- S. chlorantha* Willd
20-Hydroxyecdysone [16, 17, 19, 34]
- S. chlorifolia* Smith
2-Deoxy-20-hydroxyecdysone [5]
20-Hydroxyecdysone [16, 17, 19, 34]
Polypodine B [5, 19, 34]
- S. ciliata* Pourret
20-Hydroxyecdysone [16, 17, 19, 34]
Polypodine B [19, 34]
- S. ciliate* var *graeferi* (P)
20-Hydroxyecdysone [19]
- S. claviformis*
2-Deoxy- α -ecdysone [36]
2-Deoxy-20-hydroxyecdysone [36]
20,22-Episovaleriate-5 β -cholest-7-en-
2 β ,3 β ,14 α ,20R,22R,25-hexahydroxy-6-on [36]
20-Hydroxyecdysone [32]
Integristerone A [32]
20,22-Isovaleriate-5 β -cholest-7-en-
2 β ,3 β ,14 α ,20R,22R,25-hexahydroxy-6-on [36]
- S. coeli-rosa* (L.) God
20-Hydroxyecdysone [17, 19]
- S. colorata* Poiret
20-Hydroxyecdysone [16, 19, 34]

- S. colorata* ssp. *trichocalysina*
20-Hydroxyecdysone [16, 19, 34]
- S. coronaria* (L.) Clairv
20-Hydroxyecdysone [16, 34]
- S. cretica* L.
2-Deoxy-20-hydroxyecdysone [5]
20-Hydroxyecdysone [37, 38]
Polypodine B [37, 38]
- S. damboldtiana* Greuter et Melzh
20-Hydroxyecdysone [33, 34]
Polypodine B [33, 34]
- S. densiflora* D'Urv
20-Hydroxyecdysone [33, 34]
- S. dioica* (L.) Clairv
20-Hydroxyecdysone [39–41]
Sidisterone [40]
- S. disticha* Willd
2-Deoxy-20-hydroxyecdysone [5]
Ecdysone [5]
20-Hydroxyecdysone [37, 38]
Inokosterone [18]
Polypodine B [37, 38]
- S. echinata* Otth
Ecdysone [5]
20-Hydroxyecdysone [19]
Polypodine B [19]
- S. fetissovii* Lazkov
20-Hydroxyecdysone [5]
- S. firma* Siebold et Zucc
20-Hydroxyecdysone [38]
- S. flavescens* Waldst et Kit
20-Hydroxyecdysone [17]
- S. foliosa* Maxim
20-Hydroxyecdysone [5]
- S. fridvaldszkyana* Hampe
24(28)-Dehydromakisterone A [5]
2-Deoxyecdysone [43]
- 2-Deoxy-20-hydroxyecdysone [43]
20,26-Dihydroxyecdysone [43]
20-Hydroxyecdysone [37, 42]
26-Hydroxyintegristerone A [43]
26-Hydroxypolypodine B [43]
Integristerone A [43]
Polypodine B [43]
- S. fruticosa* L.
20-Hydroxyecdysone [19, 44]
- S. gallica* L.
20-Hydroxyecdysone [19, 45]
- S. gallica* var. *quiquivulnera* (L.) Koch
20-Hydroxyecdysone [19, 45]
- S. gebleriana* Schrenk
20-Hydroxyecdysone [5]
- S. gigantea* L.
2-Deoxyecdysone [43]
2-Deoxy-20-hydroxyecdysone [43]
2-Deoxy-20-hydroxyecdysone-25-glucoside [43]
20-Hydroxyecdysone [19, 45]
Integristerone A [43]
- S. goulimyi* Otth
20-Hydroxyecdysone [19, 45]
- S. graefferi* Guss
20-Hydroxyecdysone [5]
- S. graminifolia* Otth
2-Deoxyecdysone [43]
20-Hydroxyecdysone [37, 38]
- S. guntensis* B. Fredtsch
20-Hydroxyecdysone [26, 28]
- S. hifacensis* Rouy ex Willk
20-Hydroxyecdysone [19]
- S. holopetala* Lebed
20-Hydroxyecdysone [5]
- S. incurvifolia* Kar et Kir
20-Hydroxyecdysone [5]

- S. italica* ssp. *nemoralis*
 24(28)-Dehydromakisterone A [46]
 2-Deoxy-20-hydroxyecdysone [5]
 2-Deoxy-20-hydroxyecdysone-22-glucoside [46]
 2-Deoxyintegristerone A [47]
 22-Deoxyintegristerone A [47]
 5 α -2-Deoxyintegristerone A [48]
 9 α ,20-Dihydroxyecdysone [48, 49]
 9 β ,20-Dihydroxyecdysone [48]
 Ecdysone [5]
 20-Hydroxyecdysone [19, 37, 42, 46]
 5 α -20-Hydroxyecdysone [48]
 Integristerone A [46]
 Polypodine B [5, 19, 37, 46]
 Taxisterone [46]
- S. jensseensis* Willd
 20-Hydroxyecdysone [35, 37]
- S. kungessana* B. Fedtsch
 20-Hydroxyecdysone [5]
- S. latifolia* (Gilib) Aschers
 2-Deoxy- α -ecdysone [50]
 2-Deoxy-20-hydroxyecdysone [50]
 20-Hydroxyecdysone [26, 27]
- S. linicola* C.C. Gmelin
 2-Deoxy-20-hydroxyecdysone [51]
 Ecdysone [51]
 20-Hydroxyecdysone [37, 38, 51]
 Integristerone A [51]
 Polypodine B [51]
 Turkesterone [51]
 Viticosterone E [51]
- S. longicalycina* Kom
 20-Hydroxyecdysone [26, 27]
- S. mellifera* Boiss. et Reuter
 20-Hydroxyecdysone [19, 34, 42, 52]
- S. mellifera* Boiss. Rutger
 20-Hydroxyecdysone [43]
 Polypodine B [43]
- S. micropetala* Lag
 20-Hydroxyecdysone [37, 38]
- S. mollissima* (L.) Pers
 20-Hydroxyecdysone [5]
- S. multicaulis* Guss
 20-Hydroxyecdysone [17]
- S. multiflora* (Waldst. et Kit) Pers
 20-Hydroxyecdysone [35]
- S. nemoralis* Waldst. et Kit
 20-Hydroxyecdysone [34]
- S. nutans* L.
 22-Deoxy-20,26-dihydroxyecdysone [53]
 22-Deoxyintegristerone A [11]
 5 α -22-Deoxyintegristerone A [11]
 20,26-Dihydroxyecdysone (Podecdysone C) [11]
 20-Hydroxyecdysone [37, 54, 55]
 26-Hydroxypolypodine B [11]
 Integristerone A [11]
 Nusilsterone [56]
 Polypodine B [37, 54, 55]
 Taxisterone [57]
- S. obovata* Schischk
 20-Hydroxyecdysone [5]
- S. odoratissima* Bunge
 20-Hydroxyecdysone [5]
- S. oligantha* Boiss
 20-Hydroxyecdysone [5]
- S. otites* (L.) Wib
 2-Deoxy- α -ecdysone [54]
 2-Deoxyecdysone-22-acetate [10]
 2-Deoxy-20-hydroxyecdysone [58]
 2-Deoxy-20-hydroxyecdysone-3-acetate [59]
 5 α -2-Deoxy-20-hydroxyecdysone-3-acetate [59]
 2-Deoxy-20-hydroxyecdysone-22-acetate [11]
 2-Deoxy-20-hydroxyecdysone-3-crotonate [59]
 2-Deoxy-20-hydroxyecdysone-3,22-diacetate [59]
 2-Deoxy-21-hydroxyecdysone [58]
 5 α -2-Deoxy-21-hydroxyecdysone [58]
 2-Deoxyintegristerone A [11, 58]
 Dihydropoststerone [11]
 5 α -Dihydrorubrosterone [60]
 5 β -Dihydrorubrosterone [60]

- Ecdysone [59]
20-Hydroxyecdysone [33, 40, 54]
20-Hydroxyecdysone-22-acetate [11]
20-Hydroxyecdysone-22-benzoate [11]
20-Hydroxyecdysone-22-benzoate-25-glucoside [11]
20-Hydroxyecdysone-3-glucoside [60]
20-Hydroxyecdysone-25-glucoside [11]
Integristerone A [11]
Poststerone [11]
Rubrosterone [11]
Sidisterone [40]
- S. otites* var. *parviflorus*
20-Hydroxyecdysone [16, 19, 34, 44]
- S. paradoxa* L.
20-Hydroxyecdysone [16, 19, 34, 44]
Polypodine B [19, 34]
- S. parnassica* Boiss
20-Hydroxyecdysone [16, 19, 34, 44]
Polypodine B [19, 34]
- S. patula* Desf
20-Hydroxyecdysone [16, 19, 34, 44]
- S. portensis* L.
2-Deoxy-20-hydroxyecdysone [5]
Ecdysone [5]
20-Hydroxyecdysone [16, 19, 34, 44]
Polypodine B [19, 34]
- S. praemixta* M. Pop
2-Deoxy- α -ecdysone [61]
2-Deoxy-20-hydroxyecdysone [61]
2-Deoxy-20-hydroxyecdysone-3-acetate [62]
Ecdysone [62]
20-Hydroxyecdysone [26, 27, 61]
Praemixisterone [63]
Silenosterone [61]
Viticosterone E [62]
- S. pseudotites* Bess. ex Reichenb
2-Deoxy-20,26-dihydroxyecdysone [18, 64]
2-Deoxy- α -ecdysone [5, 18]
2-Deoxyecdysone-22-glucoside [18, 64]
2-Deoxy-20-hydroxyecdysone [18]
5 α -2-Deoxyintegristerone A [18]
- 2-Deoxypolypodine B-3- β -D-glucoside [18, 64]
20-Hydroxyecdysone [34]
Polypodine B [5]
- S. psevdovelutina* Rothm
20-Hydroxyecdysone [34]
- S. pygmaea* Adams
20-Hydroxyecdysone [17]
- S. quinquevulnera* L.
20-Hydroxyecdysone [5]
- S. radicata* Bois et Heldr
20-Hydroxyecdysone [19, 33]
- S. regia*
20-Hydroxyecdysone [18]
- S. reichenbachii* Vis
20-Hydroxyecdysone [5, 19]
- S. repens* Patrin
20-Hydroxyecdysone [35]
Integristerone A [43]
Polypodine B [35]
- S. roemeri* Friv
24(28)-Dehydromakisterone A [19]
2-Deoxy- α -ecdysone [5, 18]
2-Deoxy-20-hydroxyecdysone [19]
20-Hydroxyecdysone [19, 33]
Polypodine B [33]
- S. rubella* L.
20-Hydroxyecdysone [19, 33]
- S. saxifaga* L.
20-Hydroxyecdysone [5]
- S. scabrifolia* Kom
2-Deoxy- α -ecdysone [65]
2-Deoxyecdysone-3-acetate [66]
20-Hydroxyecdysone [65]
20-Hydroxyecdysone-2,3-acetonide [67]
20-Hydroxyecdysone-2,3-acetonide-22-benzoate
[65, 67]
20-Hydroxyecdysone-20,22-acetonide [68]

- 20-Hydroxyecdysone-22-benzoate [65]
20-Hydroxyecdysone-22,25-dibenzoate [67]
- S. schafta* S.G.Gmel. ex Hohen
20-Hydroxyecdysone [5]
- S. schischkini* (M.Pop) Vved
20-Hydroxyecdysone [5]
- S. sieberi* Fenzl
20-Hydroxyecdysone [19]
- S. schmuckeri* Wettst
20-Hydroxyecdysone [17, 34]
Polypodine B [43]
- S. schumacheri*
20-Hydroxyecdysone [17, 34]
Polypodine B [43]
- S. secundiflora* Otth
20-Hydroxyecdysone [37, 38]
- S. sendtneri* Boiss
20-Hydroxyecdysone [16, 17, 34]
Polypodine B [17, 34]
- S. sericea* All
20-Hydroxyecdysone [5]
- S. sobolevskajae* Czer
20-Hydroxyecdysone [34, 35]
- S. supina* Bieb
20-Hydroxyecdysone [34, 35]
- S. spergulifolia* (Willd.) Bieb
20-Hydroxyecdysone [5]
- S. squamigera* Boiss
20-Hydroxyecdysone [5]
- S. stenophylla* Ledeb
20-Hydroxyecdysone [5]
- S. stylosa* Bunge
20-Hydroxyecdysone [5]
- S. sussamyrica* Lazkov
20-Hydroxyecdysone [5]
- S. tatarica* L.
2-Deoxy-20-hydroxyecdysone-22-benzoate [11]
Ecdysteroside [69]
20-Hydroxyecdysone [34, 37]
20-Hydroxyecdysone-20-benzoate [70]
Sileneoside D [69]
- S. thessalonica* Boiss et Heldr
20-Hydroxyecdysone [52]
- S. tomentella* Schischk
2-Deoxy- α -ecdysone [71]
20-Hydroxyecdysone [71]
Integristerone A [71]
Polypodine B [71]
Tomentesterone A [71]
Tomentesterone B [72]
Viticosterone E [71]
- S. turczaninovii* Lazkov
20-Hydroxyecdysone [5]
- S. viridiflora* L.
2-Deoxy-20-hydroxyecdysone [73]
2-Deoxy-20-hydroxyecdysone-20,22-acetonide [74]
5 α -2-Deoxy-20-hydroxyecdysone-20,22-acetonide [74]
2-Deoxyintegristerone A [74]
2-Deoxy-5,20,26-trihydroxyecdysone [74]
2-Deoxy-5,20,26-trihydroxyecdysone-20,22-acetonide [74]
20,26-Dihydroxyecdysone (Podecdysone C) [75]
20,26-Dihydroxyecdysone-20,22-acetonide [74]
20,26-Dihydroxyecdysone-2,22-diacetate [76]
20,26-Dihydroxyecdysone-3,22-diacetate [76]
20-Hydroxyecdysone [73]
26-Hydroxypolypodine B [73]
Integristerone A [73]
Makisterone C 2,3;20,22-diacetonide [74]
Polypodine B [37, 73]
Sileneoside A [73]
Silenoside D [73]
Taxisterone [77]
5,20,26-Trihydroxyecdysone-20,22-acetonide [74]
- S. wallichiana* Klotzsch
2-Deoxy- α -ecdysone [78, 79]
2-Deoxyecdysone-22-benzoate [78]
2-Deoxy-20-hydroxyecdysone [78, 79]

2-Deoxy-20-hydroxyecdysone-25-acetate [80]
 2-Deoxy-20-hydroxyecdysone-3-benzoate [79]
 20-Hydroxyecdysone [78]
 20-Hydroxyecdysone-22-benzoate [67]
 Integristerone A [79]
 Viticosterone E [78]
 Viticosterone E-22-benzoate [81]

S. wolgensis (Hornem.) Bess
 20-Hydroxyecdysone [5]

S. zawadskii Herbich
 20-Hydroxyecdysone [17]

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Fam. Chenopodiaceae

Atriplex nummularia Lindl

20-Hydroxyecdysone [1]

Axyris amaranthoides L.

1 α ,20R-Dihydroxyecdysone (1-Epi-integristerone A) [2]

20-Hydroxyecdysone [2]

Bassia quinquecuspus F. Miel

Ecdysone [3]

20-Hydroxyecdysone [3]

Chenopodium album L.

24(28)-Dehydromakisterone A [4]

2-Dehydropoststerone [5]

20-Hydroxyecdysone [4, 6]

Polypodine B [4, 6]

Ch. ambrosioides L.

20-Hydroxyecdysone [6]

Ch. bonus-henricus L.

20-Hydroxyecdysone [6, 7]

Polypodine B [6, 7]

Ch. pallidicaule

20,26-Dihydroxyecdysone

(Podecdysone C) [8]

20-Hydroxyecdysone [8]

Ch. polyspermum L.

20-Hydroxyecdysone [6]

Ch. quinoa

20-Hydroxyecdysone [9]

Kancollosterone [9]

Ch. trigonon

20-Hydroxyecdysone [3]

Kochia scoparia (L.) Schrad

20-Hydroxyecdysone [10]

Polypodine B [10]

Rhagodia baccata (Labill.) Moq

22-Deoxy-20,21-dihydroxyecdysone [11]

20-Hydroxyecdysone [11]

Rh. spinescens

20-Hydroxyecdysone [3]

Spinacea oleracea L.

24(28)-Dehydromakisterone A [7]

Ecdysone [7]

Ecdysone-3-phosphate [12]

20-Hydroxyecdysone [7]

Polypodine B [7]

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Fam. Commelinaceae

Cyanothis arachnoidae C.B. Clarke

Cyanosterone A [1]

20,26-Dihydroxyecdysone (Podecdysone C) [2]

20-Hydroxyecdysone [3]

20-Hydroxyecdysone-2-acetate [4]

20-Hydroxyecdysone-2,3-acetonide [5]

20-Hydroxyecdysone-2,3;20,22-diacetonide [5]

11 α -Hydroxyrubrosterone [1]

Isovitexirone [5]

Stachysterone D [5]

Turkesterone [2]

C. longifolia Benth

Ajugasterone C [6]

Ajugasterone C-3-acetate [6]

14,15-Dehydropoststerone 2-acetate [6]

2-Deoxy-20,26-dihydroxyecdysone [6]

24-Epiatrotosterone A (24-Methylajugasterone C) [6]

20-Hydroxyecdysone [6]

20-hydroxyecdysone 3-acetate [6]

5 β -Hydroxypoststerone [6]

Isovitexirone [6]

Polypodine B [6]

Poststerone [6]

Poststerone 2-acetate [6]

C. vaga (Lour.) Schult

20-Hydroxyecdysone [7, 8]

Murdanna triquetra (Wall) Bruckn

20-Hydroxyecdysone [9]

Palisota hirsute

20-Hydroxyecdysone [10]

P. schweinfurthii

20,26-Dihydroxyecdysone (Podecdysone C) [10]

Makisterone A [10]

Rubrosterone [10]

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Amarasterone A [8]
 Carthamasterone A [9]
 Carthamasterone B [10]
 Carthamoleusterone [8]
 Carthamosterone [2, 6]
 Dacryhainansterone (5-deoxykaladasterone) [6, 7]
 24(28)-Dehydroamarasterone B [11]
 24(28)-Dehydromakisterone A [6, 12]
 2-Deoxy-20-hydroxyecdysone [12]
 22-Deoxy-28-hydroxymakisterone C [8]
 5 β -Dihydrobrosterone [2]
 Ecdysone [12]
 3-Epi-20-hydroxyecdysone [2]
 24-Epi-makisterone A [8]
 14-Epi-ponasterone A-22-glucoside [8]
 (24Z)-29-Hydroxy-24(28)-dehydromakisterone C [2]
 5 α -20-Hydroxyecdysone [2]
 20-Hydroxyecdysone [5, 12, 13]
 20-Hydroxyecdysone-2-acetate [8]
 20-Hydroxyecdysone-3-acetate [8]
 20-Hydroxyecdysone-2,3-acetonide [5, 12]
 20-Hydroxyecdysone-20,22-acetonide [5, 12]
 20-Hydroxyecdysone-2,3;20,22-diacetonide [5]
 1 β -Hydroxymakisterone C [8]
 26-Hydroxymakisterone C [8]
 15-Hydroxyponasterone A [8]
 Inokosterone [8]
 Inokosterone-20,22-acetonide [8]
 Integristerone A [2, 12]
 Integristerone A-20,22-acetonide [8]
 Integristerone B [2]
 Isovitexirone [2, 5]
 Lesterone [14]
 Leuzeasterone [2]
 Makisterone A [5]
 Makisterone C [2, 6]
 22-Oxo-20-hydroxyecdysone [2]
 Polypodine B [2, 12, 13]
 Polypodine B-20,22-acetonide [5]
 Polypodine B-22-benzoate [15]
 Poststerone [2]
 Rapisterone [12]
 Rapisterone B [16]
 Rapisterone C [17]
 Rapisterone D [18]
 Rapisterone D-20-acetate [19]
 Rubrosterone [2]
 Taxisterone [2]
 Turkesterone [8]

Fam. Compositae (Asteraceae)

Centaurea americana

20-Hydroxyecdysone [1]

Makisterone A [1]

C. dealbata

20-Hydroxyecdysone [1]

C. moschata L.

Ajugasterone C [2]

Ecdysone [3]

20-Hydroxyecdysone [3]

C. rothrockii

20-Hydroxyecdysone [1]

C. rupestris

20-Hydroxyecdysone [1]

Klaseopsis chinensis (S. Moore) L. Martins

Atrotosterone C [4]

Carthamosterone [4]

25,26-Didehydroponasterone A [4]

20-Hydroxyecdysone [4]

20-Hydroxyecdysone-2-acetate [4]

20-Hydroxyecdysone-3-acetate [4]

20-Hydroxyecdysone-20,22-butyridene acetal [4]

Podecdysone C [4]

Shidasterone [4]

Stachysterone C [4]

Leuzea carthamoides (Willd.) DC (*Rhaponticum carthamoides* (Willd.) Jlin)

Ajugasterone C [5–7]

Onopordum acanthium

20-Hydroxyecdysone [20]

Rh. integrifolium C. Winkl

24(28)-Dehydromakisterone A [12]

20-Hydroxyecdysone [21–23]

Integristerone A [12]

Integristerone B [24]

Rh. lyratum

20-Hydroxyecdysone [13]

Rh. nanum

20-Hydroxyecdysone [25]

Integristerone A [25]

Rh. pulchrum

20-Hydroxyecdysone [13]

Rh. scariosum

20-Hydroxyecdysone [13]

Rh. uniflorum L. (DC)

Ajugasterone C [26]

Ajugasterone C-20,22-acetonide [26]

Ajugasterone C-2,3;20,22-diacetonide [26]

5-Deoxykaladasterone-20,22-acetonide [26]

20-Hydroxyecdysone [21–23]

Punisterone (Rhapontisterone) [27]

Rapisterone C [26]

Rhapontisterone [28]

Turkesterone [26]

Serratula algida

20-Hydroxyecdysone [29]

S. centauroides L.

20-Hydroxyecdysone [29]

Viticosterone E [29]

S. coronata L.

Ajugasterone C [30]

Ajugasterone C-20,22-acetonide [31]

Ajugasterone C-20,22-O-R-ethylidene [31]

Dacryhainansterone (5-deoxykaladasterone) [32]

Ecdysone [30, 33]

Ecdysone-22-acetate [31]

3-Epi-20-hydroxyecdysone [30]

20-Hydroxyecdysone [30, 32, 34]

20-Hydroxyecdysone-2-acetate [31]

20-Hydroxyecdysone-3-acetate [31]

20-Hydroxyecdysone-22-acetate [30]

20-Hydroxyecdysone-20,22-acetonide [31]

20-Hydroxyecdysone-2,3;20,22-diacetonide [32]

20-Hydroxyecdysone-20,22-O-R-ethylidene [31]

Inokosterone [35]

Inokosterone-26-acetate [31]

Makisterone A [32]

Makisterone C [32]

Polypodine B [30]

Polypodine B-22-acetate [31]

Taxisterone [30]

Viticosterone E [31, 32]

S. inermis Gilib

2-Deoxy-20-hydroxyecdysone [36]

20-Hydroxyecdysone [30, 37]

Integristerone A [36]

S. komarovii

2-Deoxy-20-hydroxyecdysone [38]

20-Hydroxyecdysone [38]

Integristerone A [38]

S. procumbens

20-Hydroxyecdysone [29]

Viticosterone E [29]

S. quinquefolia Bieb

20-Hydroxyecdysone [29]

S. sogdiana Bunge

20-Hydroxyecdysone [39]

Sogdisterone [40]

Viticosterone E [41]

S. strangulata

Ajugasterone C [42]

20-Hydroxyecdysone [42]

20-Hydroxyecdysone-20,22-acetonide [42]

24-(2-Hydroxyethyl)-20-hydroxyecdysone [43]

S. tinctoria L.

22-Epi-20-hydroxyecdysone [44]

3-Epipoststerone [45]

3-Epirubrosterone [43]

Gerardiasterone [44]

20-Hydroxyecdysone [45–47]

20-Hydroxyecdysone-2-acetate [45]
 20-Hydroxyecdysone-2,22-diacetate [45]
 20-Hydroxyecdysone-3-acetate [45]
 20-Hydroxyecdysone-3,22-diacetate [45]
 20-Hydroxyecdysone-22-acetate [45]
 5 β -Hydroxyrubrosterone [45]
 22-Oxo-20-hydroxyecdysone [45]
 Makisterone C [45]
 Polypodine B [45, 47]
 Poststerone [45]
 Pterosterone [45]
 Rubrosterone [45]
 Viticosterone E [45]

S. wolffii Andrae
 Ajugasterone C-20,22-acetonide [48]
 20,22-Didehydrotaxisterone [49]
 Ecdysone [48]
 14-Epi-20-hydroxyecdysone [50]
 14 α ,15 α -Epoxy-14,15-dihydrostachysterone B [51]
 Herkesterone [52]
 25-Hydroxydacryhainansterone [50]
 1-Hydroxy-20,22-didehydrotaxisterone [49]
 20-Hydroxyecdysone [48]
 20-Hydroxyecdysone-20,22-acetonide [48]
 20-Hydroxyecdysone-2,3;20,22-diacetonide [48]
 11 α -Hydroxypoststerone [52]
 Integristerone A [48]
 22-Methylene-2 β ,3 β ,11 α ,14 α ,25-pentahydroxy-5 β -cholesta-7-en-6-one [53]
 24-Methyleneshidasterone [51]
 (20R,22R)-2 β ,3 β ,20,22,25-Pentahydroxy-5 β -cholesta-7-en-6-one [53]
 Polypodine B [48]
 Stachysterone B [51]
 2 β ,3 β ,14 α ,25-Tetrahydroxy-5 β -cholesta-7,20(22)-dien-6-one [53]
 Serfurosterone A [54]
 Serfurosterone B [54]

S. xeranthemoides Bieb
 20-Hydroxyecdysone [55]
 Integristerone A [55]

Stemmacantha uniflora
 2-Deoxy-20-hydroxyecdysone [56]
 20-Hydroxyecdysone [56]
 Integristerone A [56]

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Fam. Convolvulaceae

Ipomoea calonyction (Choisy) Hallier f.

Calonysterone [1–3]

Ecdysone [1]

20-Hydroxyecdysone [1, 4]

Kaladasterone [1, 3, 5]

Makisterone A [1]

Muristerone A [1, 3, 4]

Pharbitis purpurea

Castasterone [6, 7]

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Fam. Crassulaceae

Kalanchoe blossfeldiana

Pterosterone [1]

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Fam. Cyatheaceae

Cyathea cooperi (Hook.ex Muell) Donin
20-Hydroxyecdysone [1]

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Fam. Dioscoreaceae

Dioscorea dumetorum
Ajugasterone C [1]
Herkesterone [1]
5 β ,11 α ,20-Trihydroxyecdysone [1]

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Fam. Fabaceae

Dolichos lablab
Castasterone [1, 2]

Phaseolus vulgaris
Castasterone [1, 2]

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Fam. Fagaceae

Castanea (chestnut tree)
Castasterone [1]

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Fam. Gleicheniaceae

Gleichenia glauca (Thunb.) Hook
Ponasterone A [1]

Hicriopteris glauca
Ponasterone A [2]

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Fam. Gramineae

Briza maxima L.
20-Hydroxyecdysone [1]

Abutasterone [1]
 Ecdysone [1]
 Polypodine B [1]
 20-Hydroxyecdysone-3-glucoside [2]
 Pterosterone [1]
 Sidisterone [1]

Trisetum flavescens (L.) P. Beauv
 20-Hydroxyecdysone [2]
 20-Hydroxyecdysone-25-glucoside [2]

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Fam. Lamiaceae (Labiatae)

Ajuga australis R. Br
 Amarasterone A [1]
 Cyasterone [1]
 Ecdysone [1]
 20-Hydroxyecdysone [1]
 Makisterone A [1]

A. bracteosa Benth
 Cyasterone [1]
 20-Hydroxyecdysone [1]

A. chamaepitys
 Cyasterone [2]
 20-Hydroxyecdysone [2]
 Makisterone A [2]

A. chameacistus
 Cyasterone [3]
 20-Hydroxyecdysone [3]

A. chia Schreb
 Cyasterone [4]
 20-Hydroxyecdysone [5–7]

A. ciliate
 20-Hydroxyecdysone [8]

A. decumbens Thunb
 Ajugalactone [9]
 Ajugasterone C [10]
 Cyasterone [11]
 Decumbesterone A [12]
 20-Hydroxyecdysone [10, 11]

A. incisa Maxim
 Ajugasterone B [13]
 Cyasterone [11]
 20-Hydroxyecdysone [10, 11, 13]
 Polypodine B [10, 13]

A. iva Schreb
 Ajugasterone B [14]
 Cyasterone [14–16]
 24(28)-Dehydromakisterone A [17]
 24,25-Dehydroprecyasterone [17]
 23-Hydroxycyasterone [15]
 24-Hydroxycyasterone [14]
 20-Hydroxyecdysone [15, 17, 18]
 Makisterone A [14, 16]
 22-Oxocyasterone (22-dehydrocyasterone) [17]

A. japonica Miq
 Ajugasterone C [10]
 Cyasterone [10]
 20-Hydroxyecdysone [10]

A. laxmanni Benth
 20-Hydroxyecdysone [1, 19]
 Makisterone A [1]

A. linearifolia Pampan
 Cyasterone [1]
 20-Hydroxyecdysone [1, 19]

Ajuga macrosperma var. *breviflora*
 Ajugacetalsterone C [20]
 Ajugacetalsterone D [20]
 Breviflorasterone [20]
 Cyasterone [20]
 20-Hydroxyecdysone [20]
 20-Hydroxyecdysone-2-acetate [20]
 20-Hydroxyecdysone-3-acetate [20]
 Makisterone A [20]

A. multiflora

Cyasterone [1, 21]
20-Hydroxyecdysone [1, 22]
Makisterone A [21]

A. nipponensis Makino

Ajugacetalsterone A [22]
Ajugacetalsterone B [22]
Ajugasterone C [23]
Ajugasterone D [24, 25]
Cyasterone [11, 23]
Cyasterone-22-acetate [23]
22-Dehydrocyasterone-2-glucoside [22]
20-Hydroxyecdysone [10, 11, 26]
22-Oxocyasterone (22-dehydrocyasterone) [23]
Polypodine B [10, 11, 26]

A. remota

Ajugasterone C [27]
Cyasterone [3]
20-Hydroxyecdysone [3, 28]

A. reptans L.

Ajugalactone [29, 30]
Ajugasterone B [31]
Cyasterone [29]
20-Hydroxyecdysone [29, 30]
20-Hydroxyecdysone-22-acetate [32]
29-Norcyasterone [29]
29-Norcyasterone-2-acetate [33, 34]
29-Norsengosterone [29]
Polypodine B [30]
Reptansterone [30]
Sengosterone [35]
Viticosterone E [32]

A. reptans var. *atropurpurea*

Ajugalactone [36]
Cyasterone [36]
Cyasterone-3-acetate [37]
2-Dehydroajugalactone [30]
3-Dehydroajugalactone [30]
22-Dehydro-12-hydroxycyasterone [36]
22-Dehydro-12-hydroxy-29-norcyasterone [32]
22-Dehydro-12-hydroxy-29-norsengosterone [36]
22-Dehydro-12-hydroxysengosterone [36]
5,29-Dihydroxycapitasterone [30]
28-Episengosterone [30]

23-Hydroxycapitasterone [38]
20-Hydroxyecdysone-2-acetate [37]
20-Hydroxyecdysone-3-acetate [37]
24-Hydroxy-25-methyl-makisterone C-30-methylate [38]
29-Norcyasterone-3-acetate [37]

A. reptans var. *reptans*

Breviflorasterone [39]
24-Dehydroprecyasterone [39]
Reptanslactone A [39]
Reptanslactone B [39]
Sendreisterone [39]

A. taiwanensis

Ajugalide E [40]
Cyasterone [40]
Cyasterone-22-acetate [40]

A. turkestanica (Regel) Brig

Ajugalactone [41]
Ajugasterone B [42]
Cyasterone [43]
Cyasterone-22-acetate [44]
Ecdysone [45]
20-Hydroxyecdysone [7, 43, 46]
20-Hydroxyecdysone-2,3-acetonide [45]
Turkesterone [43]

Eriophyton wallchii Benth

Ajugalactone [47]
Cyasterone [47]
28-Epicyasterone [47]
20-Hydroxyecdysone [47]

Lamium album L.

Abutasterone [48]
20-Hydroxyecdysone [48]
Inokosterone [48]

L. barbatum

20-Hydroxyecdysone [49]

L. maculatum L.

20-Hydroxyecdysone [50]

L. purpureum L.

20-Hydroxyecdysone [48]

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Fam. Liliaceae

Asparagus dumosus Baker

Blechnoside B [1]

Calonysterone [2]

20-Hydroxyecdysone [1, 3]

A. falcatus

20-Hydroxyecdysone [2]

A. filicinus
Calonyesterone [4]
Dacryhainansterone (5-Deoxykaladasterone) [4]
25-Hydroxydacryhainansterone [4]
20-Hydroxyecdysone [4]
Stachysterone B [4]

A. laricinus
20-Hydroxyecdysone [2]

A. ramosissimus
20-Hydroxyecdysone [2]

A. scandens
20-Hydroxyecdysone [2]
20-Hydroxyecdysone-3-glucoside [2]
20-Hydroxyecdysone-25-glucoside [2]

Blandfordia graudiflora R.Br
20-Hydroxyecdysone [5]

B. punicea Sweet
Ecdysone [5]
20-Hydroxyecdysone [5]
Ponasterone C [5]
Punisterone (Rhapontisterone) [5]
Turkesterone [4]

Lilium tenuifolium
Tenuifolioside A [6]
Tenuifolioside B [6]

Lloydia serotina (L.) Reichenbach
20-Hydroxyecdysone [7]
Paris formosona Hayata
20-Hydroxyecdysone [8]

P. luquonensis
20-Hydroxyecdysone [9]

P. polyphylla Sm
20-Hydroxyecdysone [10]
Paristerone (2-epiecdysterone) [11]
Pinnatasterone [10]

P. quadrifolia L.
20-Hydroxyecdysone [12]
Polypodine B [12]

P. tetraphulla A. Gray
20-Hydroxyecdysone [13]
Polypodine B [13]

P. verticillata M. V. Bieb
Ecdysone [14]
20-Hydroxyecdysone [14]

Trillium smallii Maxim
20-Hydroxyecdysone [13]

T. erectum
20-Hydroxyecdysone [15]
Polypodine B [15]

T. tschonoskii Maxim
20-Hydroxyecdysone [13]

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Fam. Limnanthaceae

Limnanthes alba Hartw. ex Benth

Ecdysone [1]

20-Hydroxyecdysone [2]

Limnantheside A [2]

Limnantheside C [2]

L. douglasii R. Br

20-Hydroxyecdysone [3]

Limnantheside A [3]

Limnantheside B [3]

Ponasterone A [3]

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Fam. Malvaceae

Sida acuta

Ecdysone [1]

20-Hydroxyecdysone [1]

S. carpinifolia L.

20-Hydroxyecdysone [2]

S. cordifolia

20-Hydroxyecdysone [3]

Sidasterone A [3, 4]

Sidasterone B [3, 4]

S. filicaulis

20-Hydroxyecdysone [1, 4]

20-Hydroxyecdysone-2-glucoside [1]

20-Hydroxyecdysone-3-glucoside [1]

S. rhombifolia

25-Acetoxy-20-hydroxyecdysone-3-glucoside [5]

2-Deoxy-20-hydroxyecdysone-3-glucoside [5]

Ecdysone [1, 5]

Ecdysone-3-glucoside [5]

20-Hydroxyecdysone [1, 4, 5]

20-Hydroxyecdysone-3-glucoside [1, 5]

Pterosterone-3-glucoside [5]

Sidasterone A [4]

Sidasterone B [4]

S. spinosa L.

20-Hydroxyecdysone [6]

20-Hydroxyecdysone-20,22-acetonide [6]

20-Hydroxy-24-hydroxymethylecdysone [6]

Makisterone C [6]

Sidasterone A [4]

Sidasterone B [4]

Turkesterone [6]

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Fam. Melianthiaceae

Xerophyllum tenax

20-Hydroxyecdysone-2-glucoside [1]

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Fam. Menispermaceae

Abuta velutina Gleason
Abutasterone [1]

Diploclisia glauscens (Blume) Diels
24(28)-Dehydromakisterone A [2]
2-Deoxy-5 β ,20-dihydroxyecdysone [3]
3-Deoxy-1 β ,20-dihydroxyecdysone [4]
2-Deoxy-20-hydroxyecdysone [3]
Diploclidine [5]
24-Epimakisterone A [2]
20-Hydroxyecdysone [2, 6]
Makisterone A [2]
Makisterone C [3]

Fibraurea chloroleuca Miers
20-Hydroxyecdysone [7]
F. tinctoria Lour
Fibraurecdyside A [8]
Makisterone A [8]

Microsorium commutatum
Ecdysone [9]

M. maximum
2-Deoxyecdysone [9]
20-Hydroxyecdysone [9]
Inokosterone [9]
Makisterone A [9]

M. membranifolium
2-Deoxyecdysone [10]
2-Deoxyecdysone-3-[4-(1- β -D-glucopyranosyl)]-ferulate [10]
2-Deoxyecdysone-25-rhamnoside [10]
2-Deoxy-20-hydroxyecdysone [10]
2-Deoxy-20-hydroxyecdysone-3-[4-(1- β -D-glucopyranosyl)]-ferulate [10]
Ecdysone [10]
20-Hydroxyecdysone [10]
Inokosterone [9]
Makisterone A [9]
Makisterone C [9]
M. punctatum
20-Hydroxyecdysone [9]

Makisterone A [9]
Ecdysone [9]

M. scolopendria (Burm. F.)
Amarasterone A [11]
2-Deoxyecdysone [9]
2-Deoxyecdysone-22-glucoside [11]
2-Deoxy-20-hydroxyecdysone [9]
20-Deoxymakisterone A [11]
24,28-Diepi-cyasterone [11]
Ecdysone [11]
25-Epi-amarasterone A [11]
20-Hydroxyecdysone [11]
Inokosterone [11]
Makisterone A [11]
Makisterone C [11]
Poststerone [11]

Tinospora capillipes
2-Deoxy-20-hydroxyecdysone-3-glucoside [12]
3-Epi-2-Deoxy-20-hydroxyecdysone [12]

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Fam. Moraceae

Morus sp

20-Hydroxyecdysone

Inokosterone

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O. regalis

20-Hydroxyecdysone [4]

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Fam. Nyctaginaceae

Boerhaavia diffusa

20-Hydroxyecdysone

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Fam. Pinaceae

Pinus thunbergii

Castasterone [1]

2-Deoxycastasterone [1]

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Fam. Osmundaceae

Plenasium banksiifolium (Pr.) Pr

Ecdysone [1]

20-Hydroxyecdysone [1]

Osmunda asiatica Ohwi

Ecdysone [2]

20-Hydroxyecdysone [2, 3]

Ponasterone A [3]

O. japonica Thunb

Ecdysone [2]

20-Hydroxyecdysone [2, 3]

Ponasterone A [3]

Fam. Podocarpaceae

Dacrydium intermedium Kirk

Dacrysterone [1]

20-Hydroxyecdysone [2, 3]

20-Hydroxyecdysone-2-cinnamate [4, 5]

20-Hydroxyecdysone-3-p-coumarate [5]

Makisterone A [1]

Polypodine B [4–6]

Polypodine B-2-cinnamate [4, 5]

Ponasterone C [5]

Ponasterone C-2-cinnamate [5]

Pterosterone [5]

D. pierrei

Ajugasterone C [6]
 Dacryhainansterone (5-deoxykaladasterone) [6]
 20-Hydroxyecdysone [6]
 Ponasterone A [6]

Podocarpus amarus Bl

20-Hydroxyecdysone [7]
 20,26-Dihydroxyecdysone (Podecdysone C) [8]
 20-Hydroxyecdysone [7, 9]
 Makisterone A [10]
 Makisterone C [11]
 Podecdysone B [10]

P. andina Poepp. ex Endl

20-Hydroxyecdysone [7, 12]

P. campactus

20-Hydroxyecdysone [7]

P. chinensis Wall

20-Hydroxyecdysone [13, 14]
 Ponasterone A [13, 15]

P. dacrydioides A. Rich

20-Hydroxyecdysone [7, 9]

P. dispermus C.T.Wheite

20-Hydroxyecdysone [7]
 Ponasterone A [7]

P. drougianus

20-Hydroxyecdysone [7]

P. elatus R. Br

20-Hydroxyecdysone [7, 9]

P. elongata L. Her. ex Pers

20-Hydroxyecdysone [7, 9]

P. falcata R. Br. ex. Mirb

20-Hydroxyecdysone [7, 9]

P. ferrugineus G. Benn

20-Hydroxyecdysone [7, 9]

P. gracilior

Ponasterone A [16]

P. macrophyllus D. Don

20-Hydroxyecdysone [13]
 Makisterone A [15]
 Makisterone B [15, 17]
 Makisterone C [17]
 Makisterone D [15, 17]
 Ponasterone A [13, 15]

P. nakaii Hay

20-Hydroxyecdysone [18, 19]
 Ponasterone A [18]
 Ponasterone B [20]
 Ponasterone C [20]

P. nerifolius D. Don

Ponasterone A [7]

P. nivalis Hook

20-Hydroxyecdysone [7]

P. nubigena Lindl

20-Hydroxyecdysone [13, 14]

P. spinulosus R. Br

20-Hydroxyecdysone [7]

P. selowii

Ponasterone A [21]

P. totara D. Don

20-Hydroxyecdysone [7]

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- P. glycyrrhiza*
 Polypodoside A [6]
 Polypodoside B [7]
 Polypodoside C [7]
- P. japonicum* Makino
 20-Hydroxyecdysone [8]
- P. virginianum*
 Ecdysone [9]
 20-Hydroxyecdysone [9]
- P. vulgare* L.
 Abutasterone [10]
 Ecdysone [10]
 5-Hydroxyabutasterone [10]
 20-Hydroxyecdysone [11, 12]
 24-Hydroxyecdysone [10]
 Inokosterone [10]
 Osladin [13]
 Polypodine B [12, 14]
 Polypodosaponin [15]

Fam. Polypodiaceae

Cryopsis hastatus (Thunb.) Copel
 20-Hydroxyecdysone [1]

Lemmaphyllum microphyllum Presl
 Ecdysone [2]
 20-Hydroxyecdysone [2, 3]
 Makisterone C [3]
 Pterosterone [2, 3]

Neocheiropteris ensata (Thunb.) Ching
 Ecdysone [2]
 20-Hydroxyecdysone [2]

Pleopeltis thunbergiana Kaulf
 20-Hydroxyecdysone [2, 4]

Polypodium aureum L.
 20-Hydroxyecdysone [4]
 Polypodoaurein [5]

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Fam. Pteridaceae

Acrostichum aureum L.

20-Hydroxyecdysone [1]

Ponasterone A [1]

Pterosterone [1]

A. speciosum Willd

Ecdysone [1]

20-Hydroxyecdysone [1, 2]

Phymatodes novaezealandiae

Ponasterone A [3–5]

P. virginianum

Ecdysone [6]

Pteridium aquilinum (L.) Kuhn

Ecdysone [7]

20-Hydroxyecdysone [7]

P. aquilinum var. *latiusculum*

20-Hydroxyecdysone [8]

Ponasterone A [3–5]

Ponasteroside A [8]

Ecdysone [6]

20-Hydroxyecdysone [6]

Polypodine B [6]

Pteris cretica L.

Cyasterone [9]

20-Hydroxyecdysone [9]

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Fam. Ranunculaceae

Anemone nemerosa L.

20-Hydroxyecdysone [1]

A. ranunculoides L.

20-Hydroxyecdysone [1]

A. tuberosa Rydb

20-Hydroxyecdysone [1]

Helleborus abchasicus A. Br

20-Hydroxyecdysone [2]

H. atrorubens Hort

20-Hydroxyecdysone [2]

Polypodine B [2]

H. bocconeii Ten. ssp. *bocconeii*

20-Hydroxyecdysone [2]

Polypodine B [2]

H. bocconeii ssp. *intermedius*

20-Hydroxyecdysone [3]

Polypodine B [3]

H. caucasicus

20-Hydroxyecdysone [4]

H. cyclophyllus Boiss

20-Hydroxyecdysone [2]

Polypodine B [2]

H. dumentorum Waldst Kit in Willd. sp. *dumentorum*

20-Hydroxyecdysone [2]

Polypodine B [2]

H. dumentorum ssp. *atrorubens* (Waldst. Kit.)

Merxm. Podl

20-Hydroxyecdysone [2]

Polypodine B [2]

- H. foetidus* L.
20-Hydroxyecdysone [2]
- H. guttatus* A. Braun
20-Hydroxyecdysone [2]
Polypodine B [2]
- H. lividus* Aiton ssp. *lividus*
20-Hydroxyecdysone [2]
- H. lividus* ssp. *corsicus* (Willd.) Tutin
20-Hydroxyecdysone [2]
- H. multifidus* Vis. ssp. *multifidus*
20-Hydroxyecdysone [2]
Polypodine B [2]
- H. multifidus* ssp. *serbicus* (Adamovic) Merzm. Podl
Polypodine B [2]
- H. niger* L. ssp. *niger*
20-Hydroxyecdysone [2]
- H. odorus* ssp. *Laxus* (Host) Merxm and Podl
20-Hydroxyecdysone [5, 6]
Polypodine B-3- β -glucoside [6]
5 α -Polypodine B [6]
5 α -Polypodine B-3-glucoside [6]
- H. odorus* Waldst and Kit
20-Hydroxyecdysone [5]
- H. odorus* ssp. *Laxus* (Host) Merxm and Podl
20-Hydroxyecdysone [5, 6]
- H. orientalis* Hutrids
20-Hydroxyecdysone [2]
20-Hydroxyecdysone-3-glucoside [7]
Polypodine B [2]
- H. purpurascens* Waldst and Kit
20-Hydroxyecdysone [5]
Polypodine B-3- β -glucoside [6]
5 α -Polypodine B [6]
5 α -Polypodine B-3-glucoside [6]
- H. torquatus* Archer-Hind
20-Hydroxyecdysone [8]
20-Hydroxyecdysone-3-glucoside [8]

- H. viridis* L.
20-Hydroxyecdysone [2, 5]
- H. viridis* L. ssp. *occidentalis* (Reuter) Schiffner
20-Hydroxyecdysone [2]
Polypodine B [2]
- H. viridis* ssp. *viridis*
20-Hydroxyecdysone [5]
- Pulsatilla alpine* (L.) Delarbre
20-Hydroxyecdysone [9]
- P. sulphurea* L.
20-Hydroxyecdysone [9]

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Fam. Schizaeaceae

- Lygodium japonicum* (Thunb.) Sw
Ponasteroside A [1]
Lygodiumsteroside A [1]
- Schizea dichotoma* (L.) Sm
Ajugasterone C [2]
20-Hydroxyecdysone [2]

Ponasterone A [2]
 Pterosterone [2]
 Schizaeasterone A [3]
 Schizaeasterone B [3]

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Fam. Scrophulariaceae

Ourisia caespitosa Benth
 20,26-Dihydroxyecdysone (Podecdysone C) [1]
 20-Hydroxyecdysone [1]

O. macrocarpa Hook
 20,26-Dihydroxyecdysone (Podecdysone C) [1]
 20-Hydroxyecdysone [1]

O. macrophylla Hook
 20,26-Dihydroxyecdysone (Podecdysone C) [1]
 20-Hydroxyecdysone [1]

Penstemon venustus Dougl
 20-Hydroxyecdysone [2]
 Makisterone A [2]
 Makisterone C [2]
 Taxisterone [2]
 Venustone [2]

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Fam. Sinopteridaceae

Cheilanthes mysurensis Wall. ex Hooker
 Cheilanthone B [1]

Ch. seiberi Kze
 2-Deoxy- α -ecdysone [2]
 2-Deoxy-20-hydroxyecdysone [2]
 Ecdysone [2]
 20-Hydroxyecdysone [2]
 Ponasterone A [2]

Ch. tenuifolia (Burm. F.) Swartz
 Cheilanthone A [3]
 Cheilanthone B [3]
 Ecdysone [3]

Pellaea falcata
 20-Hydroxyecdysone [2]

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Fam. Solanaceae

Nierembergia hippomanica
 7,8-Dihydroajugasterone C [1]
 20-Hydroxyecdysone [1]

Solanum xanthocarpum
 Carpesterol [2]
 3 β ,22-Dihydroxy-4 α -methyl-24-ethyl-5 α -cholest-7-en-6-one [3]

- 14 α -Hydroxycarpesterol [3]
 14 β -Hydroxycarpesterol [3]
 3 β (p-Hydroxy)-benzoxy-22-hydroxy-4 α -methyl-24-ethyl-5 α -cholest-7-en-6-one [3]

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Fam. Stachyuraceae

- Stachyurus himalaicus* var. *himalaicus*
 20-Hydroxyecdysone [1]
 20-Hydroxyecdysone-20,22-acetonide [1]
 Polypodine B-20,22-acetonide [1]

- S. praecox* Sieb. et Zucc
 20-Hydroxyecdysone [2, 3]
 Shidasterone (Stachysterone D) [4, 5]
 Stachysterone A [3]
 Stachysterone B [3]
 Stachysterone C [5, 6]

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Fam. Taxaceae

- Taxus baccata* L.
 20-Hydroxyecdysone [1–3]

- T. breviflora*
 Ponasterone A [4]

- T. chinensis*
 20-Hydroxyecdysterone [5]

- T. cuspidata* Siebold et Zucc
 20-Hydroxyecdysone [6, 7]
 7,8 β -Dihydroponasterone A [8]
 20-Hydroxyecdysterone [6, 7]
 Makisterone A [9]
 Ponasterone A [6]
 Taxisterone [10, 11]

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Fam. Thelypteridaceae

Cyclosorus acuminatus (Panz.) Nakai
20-Hydroxyecdysone [1]

Dryopteris thelypteris (L.) A. Gray
20-Hydroxyecdysone [2]
Ponasterone A [3]

Thelypteris japonica (Bak.) Ching
Ecdysone [2]
20-Hydroxyecdysone [2]

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Fam. Typhaceae

Typha latifolia
2-Deoxycasterone [1]

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Fam. Verbenaceae

Vitex agnus-castus
20-Hydroxyecdysone [1]
Viticosterone E [1]

V. canescens Kurz
Calonysterone [2]
Canescensterone [3]
20,26-Dihydroxyecdysone (Podecdysone C) [4]
24-Epiabutasterone [2]
24-Epimakisterone A [2]
20-Hydroxyecdysone [3]
24-Methylshidasterone [5]
Shidasterone (Stachysterone D) [2]
11 α ,20,26-Trihydroxyecdysone [6]
11 α ,20,24-Trihydroxyecdysone [6]
Turkesterone [2]

V. cymosa Bertero
20-Hydroxyecdysone [7]
26-Hydroxypinnatasterone [7]

V. fisherii
Ajugasterone C [8]
20-Hydroxyecdysone [8]
Turkesterone [8]
Vitexirone [8]

V. glabrata R. Br
Calonysterone [9]
20,26-Dihydroxyecdysone (Podecdysone C) [4]
20-Hydroxyecdysone [10]
Pterosterone [11]
Turkesterone [10]

V. leptobotrys
24(28)-Dehydromakisterone A [12]
2-Deoxy-20-hydroxyecdysone [12]
24-Epimakisterone A [12]
20-Hydroxyecdysone [12, 13]
Makisterone A [12]
V. madiensis
Ajugasterone C [14]
20-Hydroxyecdysone [14, 15]

V. megapotamica (Spreng) Moldenke
20-Hydroxyecdysone [15–17]
Inokosterone [16, 17]
Polypodine B [16, 17]
Pterosterone [17]
Viticosterone E [17]

V. pinnata
20,26-Dihydroxyecdysone (Podecdysone C) [4]

20-Hydroxyecdysone [15]

Pinnatasterone [15]

V. polygama Cham

Ajugasterone C [7]

Ajugasterone C-20,22-acetonide [7]

20-Hydroxyecdysone [7]

Turkesterone [7]

V. rehmanni Guerke

20-Hydroxyecdysone [15, 18]

V. scabra Wall. ex Schauer

Ajugasterone C [19]

Calonysterone [19]

24-Epiabutasterone [19]

24-Epimakisterone A [19]

24-Epipinnatasterone (24 α -Hydroxy-22-deoxy-20-hydroxyecdysone) [19]

11 α -Hydroxyecdysone [19]

20-Hydroxyecdysone [19]

Pinnatasterone (24 β -Hydroxy-22-deoxy-20-hydroxyecdysone) [19]

Polypodine B [19]

Scabrasterone [19]

Turkesterone [19]

V. sereti De Wild

20-Hydroxyecdysone [15, 18]

V. strickeri

Abutasterone [20]

Ajugasterone C [20]

Ajugasterone C-20,22-acetonide [20]

11 α -Hydroxyecdysone [20]

20-Hydroxyecdysone [20, 21]

20-Hydroxyecdysone-20,22-acetonide [20]

V. thyrsoflora

20-Hydroxyecdysone [15]

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Fungi

FAM. AGARICACEAE

Agaricus blazei

3 β ,5 α -Dihydroxy-(22E,24R)-ergosta-7,22-dien-6-one [1]

3 β ,5 α ,9 α -Trihydroxyergosta-7,22-diene-6-one [1]

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Fam. Ganodermataceae

Ganoderma lucidum

Ergosta-4,7,22-triene-3,6-dione [1]

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Fam. Hericiaceae

Hericum erinacens

3 β ,5 α ,9 α -Trihydroxyergosta-7,22-diene-6-one [1]

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Fam. Hygrophoropsidaceae

Tapinella panuoides (Fr. Ex Fr.) Gilb

20-Hydroxyecdysone [1]

25-Hydroxypanuosterone [1, 2]

Malacosterone [1]

Panuosterone [1, 2]

Ponasterone A [1]

Turkesterone [1]

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Fam. Lycoperdaceae

Calvatia cyathiformis (Bosc.) Morg

Calvasterol A [1]

Calvasterol B [1]

Cyathisterone [2]

Lasiosphaera nipponica

3 β ,14 α ,17 α ,20,24,25-Hexahydroxy-5 α -ergosta-7,22-dien-6-one [3]

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Fam. Meripilaceae

Grifola frondosa

3 β ,5 α -Dihydroxy-(22E,24R)-ergosta-7,22-dien-6-one [1]

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Fam. Paxillaceae

Paxillis atrotomentosus (Batsch)

Atrotosterone A [1, 2]

Atrotosterone B [1, 2]
 Atrotosterone C [1]
 25-Hydroxyatrotosterone A [1]
 25-Hydroxyatrotosterone B [1]
 20-Hydroxyecdysone [1]
 Paxillosterone [3, 4]
 Paxillosterone 20,22-p-hydroxybenzylidene acetal
 [1]

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Fam. Pleurotaceae

Lentinus edodes

3 β ,5 α ,9 α ,14 α -Tetrahydroergosta-7,22-dien-6-one [1]
 3 β ,5 α ,9 α -Trihydroxy-(22E,24R)-23-methyl-ergosta-7,22-dien-6-one [1]
 3 β ,5 α ,9 α -Trihydroxy-(24S)-ergost-7-en-6-one [1]

Pleurotus ostreatus

3 β ,5 α -Dihydroxy-(22E,24R)-ergosta-7,22-dien-6-one [1]
 3 β ,5 α ,9 α ,14 α -Tetrahydroergosta-7,22-dien-6-one [1]
 3 β ,5 α ,9 α -Trihydroxy-(24S)-ergost-7-en-6-one [1]

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Fam. Polyporaceae

Polyporus umbellatus Fries

(20S,22R,24R)-16,22-Epoxy-3 β ,14 α ,23 β ,25-tetrahydroergost-7-en-6-one [1]
 (23R,24R,25R)-23,26-Epoxy-3 β ,14 α ,21 α ,22 α -tetrahydroergost-7-en-6-one [1]
 Polyporusterone A-G [2]
 Polyporusterone H-J [3]
 Polyporoid A-C [4]
 Polyporusterone A-C, G [4]

P. versicolor

3 β ,5 α ,9 α -Trihydroxyergosta-7,22-diene-6-one [5]

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Fam. Rhodomelaceae

Laurencia pinnata Yamada

Acetylpinasterol [1]
 22-Epi-14 α -hydroxy-2-acetylpinasterol [2]
 14-Hydroxyacetylpinasterol [2]
 14-Hydroxypinasterol [2]
 14-Hydroxypinasterol 3-acetate [2]
 Pinasterol [1, 2]

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Fam. Strophariaceae

Pholiota nameko

3 β ,5 α ,9 α ,14 α -Tetrahydroxyergosta-7,22-dien-6-one

[1]

3 β ,5 α ,9 α -Trihydroxy-(24S)-ergost-7-en-6-one [1]

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Fam. Tricholomataceae

Hypsizigus marmoreus

3 β ,5 α ,9 α ,14 α -Tetrahydroxyergosta-7,22-dien-6-one

[1]

3 β ,5 α ,9 α -Trihydroxy-(24S)-ergost-7-en-6-one [1]

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