Supplementary Material

**Table S1** Iridoids isolated from the genus *Valeriana* and their activities

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| **No.** | **Compound names** | **Activities** | **Sources** | **Parts** | **References** |
|  | Jatamanvaltrate A | Cytotoxic | *Valeriana jatamansi* Jones (*V. jatamansi*) | Whole plants | Lin et al. (2009) |
|  | Jatamanvaltrate B | Cytotoxic; Anti-inflammatory | *V. jatamansi*; *Valeriana officinalis* L. (*V. officinalis*) | Whole plants; Roots and rhizomes | (Lin et al., 2009; Liu et al., 2021; Wang et al., 2009a) |
|  | Jatamanvaltrate C | Cytotoxic | *V. jatamansi*; *V. officinalis* | Whole plants | (Lin et al., 2009; Wang et al., 2009a) |
|  | Jatamanvaltrate D | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Jatamanvaltrate E | Cytotoxic; Anti-inflammatory | *V. jatamansi* | Whole plants;  Roots and rhizomes | (Lin et al., 2009; Liu et al., 2021) |
|  | Jatamanvaltrate F | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Jatamanvaltrate G | Cytotoxic; Neuroprotective | *V. jatamansi* | Whole plants; Roots | (Lin et al., 2009; Xu et al., 2011a) |
|  | Jatamanvaltrate H | Cytotoxic; Neuroprotective | *V. jatamansi* | Whole plants | (Lin et al., 2009; Yu et al., 2010) |
|  | Valeriotriate B | Cytotoxic | *V. jatamansi* | Whole plants; Roots | (Lin et al., 2009; Xu et al., 2011a) |
|  | Valeriotetrate A | Cytotoxic | *V. jatamansi* | Whole plants | (Lin et al., 2009; Yu et al., 2010) |
|  | Didrovaltrate acetoxyhydrin | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Valeriotetrate B |  | *Valeriana wallichii* DC. (*V. wallichii*) | Roots | Wang et al. (2008) |
|  | Valerjatadoid B |  | *V. jatamansi* | Roots and rhizomes | Yang et al. (2015) |
|  | Suspensolide F | Neuroprotective | *Valeriana amurensis* P. Smirn. ex Kom. (*V. amurensis*) | Roots and rhizomes | Wan et al. (2016) |
|  | Valeriotetrate C | Cytotoxic; Anti-inflammatory | *V. jatamansi*; *V. officinalis* | Roots and rhizomes | (Liu et al., 2021; Wang et al., 2008; Lin et al., 2010b) |
|  | Chlorovaltrate E | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate F | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate G | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate H | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate I | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate J | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate K | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Jatamandoid A | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2011a) |
|  | Jatadoid B | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012c) |
|  | Volvaltrate B | Cytotoxic | *V. officinalis* ; *V. jatamansi* | Roots; Whole plants | (Wang et al., 2009a; Lin et al., 2010b, 2013) |
|  | Jatamanvaltrate L | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Jatamanvaltrate M | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | 5-Hydroxydidrovaltrate | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Isovaleroxyhydroxy-dihydrovaltrate / Patriscadoid / IVHD-valtrate | Cytotoxic | *V. jatamansi*; *V. amurensis* | Whole plants;  Roots and rhizomes | (Lin et al. 2009; Janaína et al., 2018) |
|  | ΠHD-acevaltrate |  | *Valeriana polystachya* Sm. (*V. polystachya*)； | Roots and rhizomes | Janaína et al. (2018) |
|  | 11-Homohydroxldihydrovaltrate |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2002) |
|  | Didrovaltrate | Cytotoxic | *V. officinalis*; *V. jatamansi*;  *V. amurensis* | Whole plants; Rhizomes | (Lin et al. 2009; Thies, 1968b) |
|  | Homodidrovaltrate |  | *V. jatamansi* | Roots and rhizomes | (Liu, 2020; Bos et al., 2002; Thies, 1968a) |
|  | AHD-valtrate |  | *V. jatamansi* | Roots and rhizomes | (Liu, 2020; Bos et al., 2002) |
|  | Isodidrovaltrate |  | *V. jatamansi* | Roots and rhizomes | (Bos et al., 2002; Kucaba et al., 1980) |
|  | Jatamanvaltrate X | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Jatamanvaltrate Y | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Nardostaehin | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Valdiate |  | *V. officinalis* | Roots | Granicher et al. (1995) |
|  | Stenopterin A |  | *Valeriana stenoptera* Diels (*V. stenoptera*) | Whole plants | Dong et al. (2015a) |
|  | Patrinoside-aglucone | Neuroprotective | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Loganin |  | *V. amurensis* | Roots and rhizomes | Wan et al. (2016) |
|  | 1-*epi*-Bosnarol | Cytotoxic | *Valeriana dioscoridis* Sibth. & Sm. (*V. dioscoridis*) | Roots | Kırmızıbekmeza et al. (2018) |
|  | 8-*epi*-Deoxyloganin aglycone | Cytotoxic | *V. dioscoridis* | Roots | Kırmızıbekmeza et al. (2018) |
|  | Valerosidate/Valerosidatum |  | *V. officinalis*; *V. wallichii* | Roots and rhizomes | (Inouye et al., 1974; Thies, 1970) |
|  | Valerosidatumpentaacetat |  | *V. officinalis*; *V. wallichii* | Roots and rhizomes | Inouye et al. (1974) |
|  | Dioscoridin B | Cytotoxic | *V. dioscoridis* | Roots | Kırmızıbekmeza et al. (2018) |
|  | 10-Acetylpatrinoside | Cytotoxic | *V. dioscoridis* | Roots | (Lin et al., 2009; Kırmızıbekmeza et al., 2018) |
|  | 10,2′-Diacetylpatrinoside | Cytotoxic | *V. dioscoridis* | Roots | Kırmızıbekmeza et al. (2018) |
|  | Volvaltrate C |  | *V. officinalis* | Roots | Amanzadeh et al. (2002) |
|  | Volvaltrate D |  | *V. officinalis* | Roots | Maurya et al. (2020) |
|  | Valerianoside A |  | *V. jatamansi* | Roots | Maurya et al. (2020) |
|  | Jatadomin D | Anti-inflammatory | *V. jatamansi* | Roots | Wang et al. (2020a) |
|  | Stenopterin B | Neuroprotective | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Dioscoridin C | Cytotoxic | *V. dioscoridis* | Roots | Kırmızıbekmeza et al. (2018) |
|  | Valeriotriate A |  | *V. jatamansi* | Roots | Yu et al. (2010) |
|  | Valerialloside A |  | *V. jatamansi* | Roots | Maurya et al. (2020) |
|  | Patrinoside | Neuroprotective | *Valeriana fauriei* Briq. (*V. fauriei*); *V. amurensis* | Roots and rhizomes | (Nishiya et al., 1994; Wang et al., 2012a) |
|  | Kanokoside D |  | *V. fauriei* | Roots and rhizomes | Nishiya et al. (1994) |
|  | Kanokoside A | Neuroprotective | *V. fauriei*; *V. amurensis* | Roots and rhizomes | (Nishiya et al., 1994; Wang et al., 2012a) |
|  | Kanokoside C |  | *V. fauriei* | Roots and rhizomes | Nishiya et al., 1994 |
|  | Chlorovaltrate Y |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Valejatadoid B |  | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Dihydrocornin |  | *Valeriana glechomifolia* F.G.Mey. (*V. glechomifolia*) | Roots and aerial parts | Salles et al. (2000) |
|  | 10-Isovaleryl kanokoside C |  | *V. fauriei* | Roots and rhizomes | Guo et al. (2006) |
|  | Jatamanvaltrate I | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Jatamanvaltrate J | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Jatamanvaltrate K | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | 10-Isovaleroxy-valtrathydrin | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Isovaltrate acetoxyhydrin |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Patriscabrin C |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Valtrate hydrin B1 |  | *Valeriana alliariifolia* var. *tiliifolia* (Troickij) V.E.Avet. (*V. alliariifolia*) | Aerial parts | Holzl et al. (1976) |
|  | Valtrate hydrin B2 |  | *V. alliariifolia* | Aerial parts | Holzl et al. (1976) |
|  | Valtrate hydrin B3 | Cytotoxic | *V. alliariifolia*; *Valeriana sorbifolia* Kunth (*V. sorbifolia*) | Aerial parts | Xu et al. (2007) |
|  | Valtrate hydrin B4 |  | *Valeriana alliariifolia* Vahl. | Aerial parts | Koch et al. (1985) |
|  | Valtrate hydrin B5 |  | *V. alliariifolia* | Aerial parts | Koch et al. (1985) |
|  | Valtrate hydrin B6 |  | *V. alliariifolia* | Aerial parts | Koch et al. (1985) |
|  | Valtrate hydrin B7 | Cytotoxic | *V. alliariifolia*; *V. sorbifolia* | Aerial parts | Koch et al. (1985) |
|  | Valtrate hydrin B8 |  | *V. alliariifolia* | Aerial parts | Holzl et al. (1976) |
|  | Acetoxydesiovaleroxy-1-*α*-acetoxy-isovaleroxy isovaltratehydrin |  | *Valeriana sisymbriifolia* Vahl. (*V. sisymbriifolia*) | Roots and rhizomes | Amanzadeh et al. (2002) |
|  | 10-Acetoxyvaltrathydrin | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2009) |
|  | Isovaltrate isovaleroyloxyhydrin |  | *V. officinalis*; *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | 10-Acetoxy-1-homovaltrate hydrin |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2002) |
|  | 10-Acetoxy-1-acevaltratehydrin |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2002) |
|  | Valeriandiod F | Cytotoxic  Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | (Liu et al., 2021; Xu et al., 2012) |
|  | Sorbifolivaltrate C | Cytotoxic | *V. sorbifolia* | Aerial parts | Xu et al. (2007) |
|  | Sorbifolivaltrate D | Cytotoxic | *V. sorbifolia* | Aerial parts | Xu et al. (2007) |
|  | Jatamanvaltrate P | Cytotoxic | *V. jatamansi* | Roots and rhizomes | (Yang et al., 2015; Maurya et al., 2020; Wang et al., 2014b) |
|  | Jatamanvaltrate Q | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | (Liu et al., 2021; Yang et al., 2015) |
|  | Valerjatadoid A |  | *V. jatamansi* | Roots and rhizomes | Yang et al. (2015) |
|  | Jatadoid D |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Valejatadoid F | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Jatamanvaltrate Z1 | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2017) |
|  | Jatamanvaltrate Z2 | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2017) |
|  | Jatamanvaltrate Z3 | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2017) |
|  | Valeriandoid A | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | Valeriandoid B |  | *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | Chlorovaltrate | Cytotoxic | *V. jatamansi* | Roots and rhizomes | (Xu et al., 2012b; Wang et al., 2014b) |
|  | Rupesin B | Cytotoxic | *V. jatamansi* | Whole plants; Roots and Rhizomes | (Xu et al., 2012b; Wang et al., 2014b) |
|  | Valechlorine |  | *V. officinalis* | Roots | Popov et al. (1974) |
|  | Chlorovaltrate L | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate M | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate N | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate O | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Sorbifolivaltrate A | Cytotoxic | *V. sorbifolia* | Aerial parts | Xu et al. (2007) |
|  | Sorbifolivaltrate B | Cytotoxic | *V. sorbifolia* | Aerial parts | Xu et al. (2007) |
|  | Valtrate | Cytotoxic; Sedative | *V. officinalis*; *V. jatamansi* | Whole plants  Roots and Rhizomes | Lin et al. (2009) |
|  | Isovaltrate | Cytotoxic; Sedative | *V. officinalis*; *V. jatamansi*;  *V. sorbifolia* | Rhizomes; Aerial part | (Thies, 1968b; Xu et al., 2007) |
|  | Acevaltrate / acevaltratum | Cytotoxic; Sedative | *V. officinalis*; *V. jatamansi* | Whole plants;  Roots and Rhizomes | (Lin et al., 2009; Thies, 1968b) |
|  | Diavaltrate |  | *V. glechomifolia* | Roots and rhizomes | Salles et al. (2000) |
|  | 1-*β*-Acevaltrate |  | *V. jatamansi*; *V. alliariifolia* | Roots and rhizomes | Holzl et al. (1984) |
|  | 1-Homoacevaltrate |  | *V. jatamansi* | Roots and rhizomes | (Tang et al. 2002; Bos et al., 2002) |
|  | 1-Homoisoacevaltrate |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2002) |
|  | 7-*epi*-Deacetyl-isovaltrate |  | *V. officinalis* | Roots | Popov et al. (1974) |
|  | Hydroxylvaltrate |  | *V. officinalis*; *V. jatamansi* | Roots | (Bos et al., 2002; Popov et al., 1974) |
|  | Seneciovaltrate | Cytotoxic | *V. sorbifolia* | Aerial parts | Xu et al. (2007) |
|  | Deacetylisovaltrare |  | *V. officinalis* | Roots | Popov et al. (1974) |
|  | Valjatrate F |  | *V. jatamansi* | Roots  Aerial parts | Su, (2017) |
|  | 1-*α*-Aceisovaltrate |  | *V. sisymbriifolia* | Roots and rhizomes | Amanzadeh et al. (2002) |
|  | Jatamanvaltrate N | Neuroprotective | *V. officinalis* | Roots | Xu et al. (2012a) |
|  | Jatamanvaltrate O |  | *V. officinalis* | Roots | Xu et al. (2012a) |
|  | Jatamanvaltrate V | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Jatamanvaltrate W | Cytotoxic; Anti-inflammatory | *V. jatamansi* | Whole plants | (Lin et al., 2013; Liu et al., 2021) |
|  | Patriscadoid I | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Patriscadoid II |  | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Patriscadoid Ⅲ |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Patriscadoid Ⅳ |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Valejatadoid D | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Valejatadoid E | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Jatamanvaltrate Q | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Jatamanvaltrate R | Cytotoxic | *V. jatamansi* | Whole plants | (Lin et al., 2013; Dong et al., 2015b) |
|  | Jatamanvaltrate T | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Jatairidoid A | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | Jatairidoid B | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | Valejatadoid C / Jatadoid C |  | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Valeriandoid D |  | *V. jatamansi* | Roots | Xu et al. (2012d) |
|  | Valeriandoid E |  | *V. jatamansi* | Roots | (Wang et al., 2020a; Xu et al., 2012d) |
|  | Jatamanvaltrate S | Cytotoxic | *V. jatamansi* | Whole plants | (Lin et al., 2013; Dong et al., 2015b) |
|  | Jatamanvaltrate U | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2013) |
|  | Jatadoid A | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012c) |
|  | Valjatrate E |  | *V. jatamansi* | Roots | Su, (2017) |
|  | Valjatrate G |  | *V. jatamansi* | Roots | Su, (2017) |
|  | Valjatrate H |  | *V. jatamansi* | Roots | Su, (2017) |
|  | Desoxidodidrovaltrate | Cytotoxic | *V. jatamansi* | Roots | (Xu et al., 2011a; Tan et al., 2019) |
|  | 8,11-Desoxididrovaltrate |  | *V. wallichii* | Roots and rhizomes | Bos et al. (2002) |
|  | 8,11-Desoxihomodidrovaltratr |  | *V. wallichii* | Roots and rhizomes | Bos et al. (2002) |
|  | Jatamanin D |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | Rupesin E | Cytotoxic Antibacterial | *V. jatamansi* | Whole plants | Quan et al. (2019a) |
|  | 4-*β*-Hydroxy-8-*β*-methoxy-10-methylene-2,9-dioxatricyclo [4.3.1.0] pyran |  | *V. jatamansi* | Roots and rhizomes | Nishiya et al., 1994 |
|  | Chlorovaltrate Z |  | *V. jatamansi* | Roots and rhizomes | Liu, (2020) |
|  | Jatamanin C | Cytotoxic | *V. jatamansi* | Whole plants; Roots | Lin et al. (2010) |
|  | Valejatanin B | Cytotoxic | *V. jatamansi* | Roots | Liu et al. (2017) |
|  | 1,5-Dihydroxy-3,8-epoxyvalechlorine | Neuroprotective | *V. jatamansi*; *V. officinalis*;  *V. wallichii* | Roots and rhizomes | (Lin et al., 2010b; Xu et al., 2012b; Quan et al., 2019a) |
|  | Jatamanin O | Cytotoxic | *V. jatamansi* | Roots and rhizomes | (Yang et al., 2015; Lin et al., 2010; Li et al., 2013) |
|  | Jatamanin P | Cytotoxic | *V. jatamansi* | Roots and rhizomes | Li et al. (2013) |
|  | Valeriandoid C | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | Valejatadoid A |  | *V. jatamansi* | Roots and rhizomes | Liu et al. (2021) |
|  | Jatadomin B | Anti-inflammatory | *V. jatamansi* | Roots | Wang et al. (2020a) |
|  | Jatairidoid C | Neuroprotective | *V. jatamansi* | Roots | Xu et al. (2012b) |
|  | Chlorovaltrate P | Cytotoxic | *V. jatamansi* | Roots | Wang et al. (2017) |
|  | Chlorovaltrate Q | Cytotoxic | *V. jatamansi* | Roots | (Quan et al., 2019a; Wang et al., 2017) |
|  | Chlorovaltrate R | Cytotoxic | *V. jatamansi* | Roots | Wang et al. (2017) |
|  | Chlorovaltrate S | Cytotoxic | *V. jatamansi* | Roots | Wang et al. (2017) |
|  | Chlorovaltrate T | Cytotoxic | *V. jatamansi* | Roots | Wang et al. (2017) |
|  | (4*β*,8*β*)-8-Methoxy-3-methoxy-10-methylene-2,9-dioxatricyclo [4.3.1.0] decan-4-ol | Neuroprotective | *V. jatamansi* | Roots | (Quan et al., 2019a; Wang et al., 2017) |
|  | Chlorovaltrate A | Cytotoxic | *V. jatamansi* | Roots | Wang et al. (2017) |
|  | (1*R*,3*R*,5*R*,7*S*,8*R*,9*S*)-3,8-Epoxy-1-O-ethyl-5-hydroxyvalechlorine | Cytotoxic | *V. jatamansi* | Roots | (Quan et al., 2019a; Wang et al., 2017) |
|  | 8-Methoxy-4-acetoxy-3-chlormethyl-10-methylen-2,9-dioxa-tricyclo [4.3.1.03,7]  decan | Cytotoxic | *V. jatamansi* | Roots | Wang et al. (2017) |
|  | (1*S*,3*R*,5*R*,7*S*,8*R*,9*S*)-3,8-Epoxy-1-O-ethyl-5-hydroxyvalechlorine | Neuroprotective | *V. jatamansi* | Roots | (Wang et al., 2020a, 2017) |
|  | (1*R*,3*R*,5*R*,7*S*,8*R*,9*S*)-3,8-Epoxy-1-O-methyl-5-hydroxyvalechlorine | Neuroprotective | *V. jatamansi* | Roots | (Wang et al., 2020a, 2017) |
|  | Chlorovaltrate U |  | *V. jatamansi* | Roots | Tan et al. (2019) |
|  | Chlorovaltrate V |  | *V. jatamansi* | Roots | Tan et al. (2019) |
|  | Chlorovaltrate W |  | *V. jatamansi* | Roots | Tan et al. (2019) |
|  | Jatamanin R | Cytotoxic | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019a) |
|  | Jatamanin S | Cytotoxic | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019a) |
|  | Jatamanin T | Cytotoxic | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019a) |
|  | Jatamanin U | Cytotoxic | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019a) |
|  | Jatadomin C | Anti-inflammatory | *V. jatamansi* | Roots | Wang et al. (2020a) |
|  | (3*S*,4*S*,5*S*,7*S*,8*S*,9*S*)-3,8-Ethoxy-7-dihydroxy-4,8-dimethylperhydrocyclopenta-[c]pyran | Cytotoxic | *V. jatamansi* | Roots | Lin et al. (2010) |
|  | (3*S*,4*S*,4a*S*,6*S*,7*S*,7a*R*)-4,7-Dimethyloctahydro-3,7-epoxycyclopenta[c]pyran-6-yl acetate |  | *V. jatamansi* | Roots | Liu et al. (2017) |
|  | Jatamanin W |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019b) |
|  | Jatamanin X |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019b) |
|  | (3*S*,4*R*,5*S*,7*S*,8*S*,9*S*)-3,8-Epoxy-7-hydroxy-4,8-dimethylperhydrocyclopenta[c]pyran | Cytotoxic | *V. jatamansi* | Roots | Lin et al. (2010) |
|  | Valejatanin C | Cytotoxic | *V. jatamansi* | Roots | Liu et al. (2017) |
|  | Jatamanin V |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2019b) |
|  | Jatamanin B |  | *V. jatamansi* | Whole plants; Roots | Lin et al. (2010) |
|  | Jatamanin E |  | *V. jatamansi*; *V. amurensis* | Whole plants; Roots and rhizomes | (Janaína et al., 2018; Lin et al., 2010) |
|  | Jatamanin H |  | *V. jatamansi* | Whole plants; Roots | (Lin et al., 2010; Li et al., 2013) |
|  | Jatamanin I |  | *V. jatamansi* | Whole plants; Roots | (Lin et al., 2010; Li et al., 2013) |
|  | Jatamanin N | Cytotoxic | *V. jatamansi* | Root and Rhizome | (Lin et al., 2010; Li et al., 2013) |
|  | Volvaltrate A |  | *V. officinalis*; *V. jatamansi* | Roots | (Wang et al., 2020a; Lin et al., 2010) |
|  | Stenopterin C |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Stenopterin D |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Valeridoid B |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | Valeridoid C |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | Valeridoid D |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | Polystachyn A |  | *V. polystachya* | Roots and rhizomes | Janaína et al. (2018) |
|  | Jatadomin A | Anti-inflammatory | *V. jatamansi* | Roots | Wang et al. (2020a) |
|  | 4-Hydroxy-8-methoxy-3-methyl-10-methylene-2,9-dioxatricyclo (4,3,1,03,7) -decane |  | *V. jatamansi* | Whole plants | Jugran etval. (2019) |
|  | Baldrinal | Cytotoxic; Sedative | *V. officinalis*; *V. amurensis*; *V. jatamansi* | Roots and Rhizomes | (Thies, 1968b; Xu et al., 2012a; Jugran etval., 2019) |
|  | Decyl baldrinal | Sedative | *V. jatamansi* | Roots | Su, (2017) |
|  | 11-Methoxyviburtinal | Cytotoxic | *V. jatamansi* | Roots | (Xu et al., 2012a; Chen et al., 2005) |
|  | 11-Ethoxyviburtinal |  | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | Valejatanin A | Cytotoxic  Antibacterial | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | Homobaldrinal |  | *V. officinalis*; *V. jatamansi* | Roots | (Nishiya et al., 1994; Xu et al., 2012a) |
|  | Desacylbaldrinal | Cytotoxic | *V. jatamansi* | Roots | Tan et al. (2019) |
|  | Chlorovaltrate B |  | *V. wallichii* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate C |  | *V. wallichii* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate D |  | *V. wallichii* | Whole plants | Lin et al. (2013) |
|  | Chlorovaltrate X / Valejatadoid G |  | *V. jatamansi* | Roots | Liu et al. (2021) |
|  | Jatamanin A |  | *V. jatamansi*; *V. amurensis* | Whole plants; Roots | (Janaína et al., 2018; Li et al., 2013) |
|  | Xiecaoside B |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Valejatadoid H |  | *V. jatamansi* | Roots and rhizomes | Wang et al. (2021b) |
|  | (5*S*,7*S*,8*S*,9*S*)-7-Hydroxy-8-isovaleroyloxy-4,11-dihyronepetalactone |  | *V. officinalis* | Roots | Han et al. (2012) |
|  | (5*S*,7*S*,8*S*,9*S*)-7-Hydroxy-10-isovaleroyloxy-4,11-dihyronepetalactone |  | *V. officinalis* | Roots | Han et al. (2012) |
|  | (5*S*,8*S*,9*S*)-10-Isovaleroyloxy-*δ*-4,11-dihyronepetalactone |  | *V. officinalis* | Roots | Han et al. (2012) |
|  | 6-Hydroxy-7-(hydroxylmethyl)-4-methyl-enehexahydrocy-clopenta[c]pyran-1(3H)-one | Neuroprotective | *V. jatamansi*; *V. stenoptera* | Roots and rhizomes | (Wan et al. 2016; Quan et al., 2020b) |
|  | Jatamanin M |  | *V. jatamansi* | Whole plants;  Roots and rhizomes | Quan et al. (2020b) |
|  | Valeridoid A |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | 8,9-Diehydro-7-hydroxy-dolichodial | Anti-inflammatory; Cytotoxic | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | (5*S*,6*S*,8*S*,9*R*)-6-Isovaleroyloxy-4,11-1,3-diol |  | *V. officinalis* | Roots | Han et al. (2012) |
|  | (5*S*,6*S*,8*S*,9*R*)-1,3-Isovaleroxy-4,11-1,3-diol |  | *V. officinalis* | Roots | Han et al. (2012) |
|  | (5*S*,6*S*,8*S*,9*R*)-3-Isovaleroxy-6-isovaleroyloxy-4,11-1,3-diol | Cytotoxic | *V. officinalis* | Roots | Han et al. (2012) |
|  | Valtral A | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2015) |
|  | Valtral B | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2015) |
|  | Valtral C | Cytotoxic | *V. jatamansi* | Whole plants | Lin et al. (2015) |
|  | Jatamanin J |  | *V. jatamansi* | Whole plants; Roots | Lin et al. (2010) |
|  | Jatamanin L |  | *V. jatamansi* | Whole plants; Roots | Lin et al. (2010) |
|  | Jatamanin Q |  | *V. jatamansi* | Roots | Quan et al. (2019a) |
|  | 4,7-Dimethyloctahydrocyclopenta[c]pyran | Cytotoxic | *V. jatamansi* | Roots | Lin et al. (2010) |
|  | Valeridoid E |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | Valeridoid F | Cytotoxic | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020b) |
|  | Jatamanin G |  | *V. jatamansi* | Whole plants; Roots | (Lin et al., 2010; Li et al., 2013) |
|  | Longiflorone |  | *V. jatamansi* | Whole plants; Roots | (Wang et al., 2009a; Lin et al., 2010) |
|  | Jatamanin F |  | *V. jatamansi* | Whole plants; Roots | (Lin et al., 2010; Li et al., 2013) |
|  | Jatamanin K |  | *V. jatamansi* | Whole plants; Roots | Lin et al. (2010) |
|  | Valeiridoside | Anxiolytic | *Valeriana procera* Kunth | Roots | Alfaro-Romero et al. (2021) |
|  | Patriscabroside Ⅰ |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | *α*-Morroniside |  | *V. amurensis* | Roots and rhizomes | Wan et al. (2016) |
|  | *β*-Morroniside |  | *V. amurensis* | Roots and rhizomes | Wan et al. (2016) |
|  | 8-Methylvalepotriate |  | *V. wallichii* | Roots | Wan et al. (2016) |
|  | Patrinovalerosidate | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wan et al. (2016) |
|  | Xiecaoside C |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Xiecaoline A |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Scabroside B |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Jatadomin E | Anti-inflammatory | *V. jatamansi* | Roots | Wang et al. (2020a) |
|  | Isovillosol |  | *V. polystachya* | Roots and rhizomes | Janaína et al. (2018) |
|  | (4*R*,5*R*,7*S*,8*S*,9*S*)-7-Hydroxy-8-hydroxymethyl-4-methyl perhydrocyclopenta |  | *Valeriana laxiflora* DC.(*V. laxiflora*) | Roots and rhizomes | Gu et al. (2004) |
|  | Patriscabrol |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | Dioscoridin A | Cytotoxic | *V. dioscoridis* | Roots | Kırmızıbekmeza et al. (2018) |
|  | Amurensin A |  | *V. amurensis* | Whole plants | Xie et al. (2019) |
|  | Isopatrinioside | Neuroprotective | *V. jatamansi* | Roots | Tan et al. (2016) |
|  | Vibutinal | Neuroprotective | *V. jatamansi* | Roots | Tan et al. (2016) |
|  | Xiecaoside A |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Valjatrate I |  | *V. jatamansi* | Roots and steams | Su, (2017) |
|  | Villoside aglycone |  | *V. jatamansi* | Whole plants | Jugran etval. (2019) |
|  | 7-Hydroxy-8-(hydroxymethyl)-4methylenehexahydrocyclopenta[c]pyran-1(3H)-one |  | *V. amurensis* | Roots and rhizomes | (Janaína et al. (2018) |
|  | Valtroxal |  | *V. jatamansi* | Roots | Jugran etval. (2019) |
|  | Stenoptenri E |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |

**Table S2** Lignans isolated from the genus *Valeriana* and their activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Compound names** | **Activities** | **Resources** | **Parts** | **References** |
|  | 8′-Hydroxypinoresinol | Antitubercular | *V. officinalis*;  *V. jatamansi*;  *V. laxiflora* | Roots and rhizomes | (Lin et al., 2015; Schumacher et al., 2002; Quan et al., 2020a) |
|  | Pinoresinol-4-O-*β*-D-glucopyranoside |  | *V. officinalis*  *V. amurensis* | Roots and rhizomes | (Schumacher et al., 2002; Wang et al., 2012b) |
|  | Pinoresinol-8-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | (Wang et al., 2012a, 2012b) |
|  | 8'-Hydroxypinoresinol-4'-O-*β*-D-glucopyranoside |  | *V. officinalis* | Roots | Schumacher et al. (2002) |
|  | 8-Hydroxypinoresinol-4'-O-*β*-D-glucoside | Neuroprotective | *V. officinalis*  *V. amurensis*;  *Valeriana prionophylla* Standl.(*V.* *prionophylla*) | Roots and rhizomes | (Schumacher et al., 2002; Lin et al., 2010b) |
|  | Pinoresinol-4,4'-di-O-*β*-D-glucoside | Neuroprotective | *V. officinalis*  *V. amurensis* | Roots | (Wang et al., 2012a; Schumacher et al., 2002) |
|  | 8-Hydroxypinoresinol | Neuroprotective  Antioxidant  Vasorelaxant | *V. amurensis*  *V.* *prionophylla* | Roots and rhizomes | (Wang et al., 2012a; Piccinelli et al., 2004) |
|  | Pinoresinol | Neuroprotective | *V. jatamansi*  *V. officinalis* | Roots;  Aerial parts | (Lin et al., 2010, Li et al., 2011) |
|  | Prinsepiol | Neuroprotective  Antioxidant | *V. officinalis*;  *V. jatamansi*;  *V. prionophylla* | Roots and rhizomes;  Aerial parts | (Piccinelli et al., 2004; Li et al., 2011; Zuo et al., 2017b)) |
|  | (+)-1-Acetoxypinoresinol |  | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | Prinsepiol-4-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis*  *V. prionophylla* | Roots and rhizomes | (Janaína et al., 2018; Piccinelli et al., 2004) |
|  | Pinoresinol monomethyl ether | Neuroprotective | *V. jatamansi* | Roots | Li et al. (2011) |
|  | 8-Hydroxypinoresinol-4-O-*β*-D-glucopyranoside | Neuroprotective  Antiarrhythmic | *V. amurensis*  *V. officinalis* | Roots and rhizomes | (Wang et al., 2012a, 2012b; Liu et al., 2021) |
|  | 8'-Hydroxypinoresinol-4-O-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017b) |
|  | 8-Hydroxypinoresinol-4,4'-di-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2012a) |
|  | 3'-Demethyl-pinoresinol-4,4'-O-*β*-D-di-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017b) |
|  | 8,8'-di-Hydroxyl-pinoresinol-4-O-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017b) |
|  | 8,8'-di-Hydroxyl-pinoresinol-4,4'-di-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Janaína et al. (2018) |
|  | Fraxireslnol-4'-O-*β*-D-glucopyranoside |  | *V. amurensis*  *V. prionophylla* | Roots and rhizomes | (Wang et al., 2012b; Piccinelli et al., 2004) |
|  | Syringaresinol-4,4'-di-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Janaína et al. (2018) |
|  | Syringaresinol |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020a) |
|  | (+)-Medioresinol |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | (+)-Medioresinol-4,4'-di-O-*β*-D-glucopyranoside | Neuroprotective | *V. jatamansi* | Roots and rhizomes | (Janaína et al. (2018) |
|  | (+)-Monomethylpinoresinol |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | (+)-1,5-di-Hydroxy-2(*S*),6(*S*)-di(4-hydroxy-3-methoxyphenyl)-3,7-dioxabicyclo [3.3.0] octane |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020a) |
|  | Dipsalignan E |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020a) |
|  | 5'-Methoxyl-pinoresinol-4,4'-O-*β*-D-di-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017b) |
|  | 5'-Hydroxylpinoresinol |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | 8,9'-di-Hydroxyl-prinsepiol-4-O-*β*-D-glucopyranoside |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2012b) |
|  | (+)-Demethoxypinoresinol |  | *V. jatamansi* | Roots and rhizomes | Quan et al. (2020a) |
|  | (+)-2-(3,4-di-Methoxyphenyl)-6-(3,4-dihydroxyphenyl)-2,7-dioxabicyclo [3,3,0] octane |  | *V. jatamansi* | Roots | Li et al. (2011) |
|  | 4,4'-di-Demethylconiferolyl-3'-demethyl-8,8'-dihydroxyl-pinoresinol |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017b) |
|  | Massoniresinol-4'-O-*β*-D-glucoside |  | *V. officinalis* | Roots | Schumacher et al. (2002) |
|  | Berchemol |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | Berchemol-4'-O-*β*-D-glucoside |  | *V. officinalis* | Roots | Schumacher et al. (2002) |
|  | Lariciresinol |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | Olivil-4'-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2012b) |
|  | Lariciresinol-4,4'-di-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Janaína et al. (2018) |
|  | Olivil-4-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2012b) |
|  | 8-Hydroxylariciresinol-4'-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2012b) |
|  | Lariciresinol-4-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2012b) |
|  | Neoarctin A | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Lariciresinol-4'-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | Wang et al. (2014a) |
|  | Massoniresinol-3a-O-*β*-D-glucopyranoside | Neuroprotective | *V. amurensis* | Roots and rhizomes | (Wang et al., 2014a; Xue et al., 2016) |
|  | Massoniresinol |  | *V. jatamansi* | Roots | Li et al. (2011) |
|  | 4,4′,9,7′-Tetrahydroxy-3,3′-dimethoxy-7, 9′-epoxylignan |  | *V. jatamansi* | Whole plants | Lin et al. (2010) |
|  | (7*α*H,8′*β*H)-3,3′,8*β*,9-Tetrahydroxy-4,4′-dimethoxy-7,9′-epoxylignan |  | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | 4'-O-*β*-D-Glucosyl-9-O-(6''-deoxysaccha-rosyl) olivil |  | *V. officinalis* | Roots | Schumacher et al. (2002) |
|  | Ginkgool |  | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | Lariciresinol C |  | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | (7*S*,8*R*)-Dehydroconiferyl alcohol-8, 5′-dehydroconiferyl aldehyde-4-O-*β*-D- glucopy ranoside |  | *V. jatamansi* | Roots | Wang et al. (2021a) |
|  | (7*R*,8*S*,8′*R*,9*R*)-Tetrahydro-7-(4-hydroxy-3-methoxyphenyl)-8′-[(4′-hydroxy-3′-methoxyphenyl)methyl]-8-oxirane-8,8′-furandiol |  | *V. officinalis* | Aerial parts | Fan et al. (2020) |
|  | 4'-Demethylpodophyllotoxin | Cytotoxic | *V. wallichii* | Rhizomes | Glaser et al. (2015) |
|  | Podophyllotoxin | Cytotoxic | *V. wallichii* | Rhizomes | Glaser et al. (2015) |
|  | (−)-Matairesinol | Anti-inflammatory | *V. amurensis* | Whole plants | Xie et al. (2019) |
|  | (+)-Cycloolivil |  | *V. jatamansi*  *V. officinalis* | Roots and rhizomes | (Fan et al., 2020; Quan et al.; 2020a) |
|  | (+)-9′-Isovaleroxy-lariciresin | Cytotoxic  Anti-inflammatory | *V. jatamansi* | Roots | Quan et al. (2020a) |

**Table 3** Flavonoids isolated from the genus *Valeriana* and their activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Compound names** | **Activities** | **Resources** | **Parts** | **References** |
|  | Quercetin |  | *V. officinalis*;  *V. amurensis*;  *Valeriana hardwickii* Wall.(*V. hardwickii*) | Whole plants | (Zhao et al., 2011; Cai et al., 2015; Wang et al., 2010a) |
|  | Apigenin |  | *V. officinalis*  *V. amurensis*  *V. hardwickii* | Whole plants | (Glaser et al., 2015; Cai et al., 2015; Wang et al., 2010a) |
|  | Luteolin |  | *V. officinalis*  *V. amurensis* | Roots and rhizomes | (Glaser et al., 2015; Wang et al., 2010a) |
|  | Kaempferol |  | *V. officinalis*  *V. amurensis* | Roots and rhizomes | (Glaser et al., 2015; Wang et al., 2010a) |
|  | Acacetin | Neuroprotective | *V. officinalis*  *V. amurensis*  *V. hardwickii* | Whole plants | (Glaser et al., 2015; Cai et al., 2015; Wang et al., 2010a) |
|  | Diosmetin |  | *V. officinalis*  *V. amurensis* | Roots and rhizomes | (Glaser et al., 2015; Wang et al., 2010a) |
|  | Genkwanin |  | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | Tricin |  | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | Kaempferol-3-O-*β*-rutinoside |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2003) |
|  | Rutin |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2003) |
|  | Kaempferol-3-O-*β*-D-glucopyranoside |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2003) |
|  | Quercetin-3-O-*β*-D-glucopyranoside |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2003) |
|  | 5-Hydroxy-7,4'-dimethoxyflavone |  | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | Apigenin-7-O-*α*-L-rhamnopyranosyl (1→6)-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | Acacetin-7-O-*α*-L-rhamnopyranosyl (1→6)-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | 5-Methoxyl-acacetin-7-O-*α*-L-rhamnopyranosyl (1→6)-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | 4'-Methyl-5-methoxyl-flavone-7-O-*α*-L-rhamnopyranosyl (1→6)-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | Diosmetin-7-O-*α*-L-rhamnopyranosyl (1→6)-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | 6-Methyl-apigenin-7-O-*α*-L-rhamnopyranosyl (1→6)- [*α*-L-rhamnopyranosyl (1→2)]-*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | Acacetin-7-O-*α*-L-rhamnopyranosyl (1→6)- [*α*-L-rhamnopyranosyl (1→2)] -*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | 5-Methoxyl-acacetin-7-O-*α*-L-rhamnopyranosyl (1→6)- [*α*-L-rhamnopyranosyl (1→2)] -*β*-D-glucopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | 8-Methyl-apigenin-7-O-*β*-D-glucopyranosyl (1→2)-*β*-D-galactopyranoside |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | 6-Methylapigenin | Anxiolytic Anticonvulsant  Sedative | *V. officinalis*;  *V. wallichii*;  *V. hardwickii* | Roots and rhizomes | (Wang et al., 2010a; Marder et al., 2003; Fernández et al., 2004) |
|  | Acacetin-7-O-*β*-D-glucopyranoside |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2003) |
|  | Apigenin-7-O-*β*-D-glucopyranoside |  | *V. jatamansi* | Roots and rhizomes | Tang et al. (2003) |
|  | (-)-Farrerol |  | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | Syzalterin |  | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | 5,7-Trihydroxy-3,6,4'-trimethoxyflavanone |  | *V. officinalis* | Aerial parts  Roots | Wang et al. (2010a) |
|  | 8-Hydroxyl-didymin |  | *V. officinalis* | Roots and rhizomes | Zuo et al. (2017a) |
|  | Acacetin-7-O-*β*-sophoroside |  | *V. jatamansi* | Roots and rhizomes | (Wang et al., 2010a; Tang et al., 2003) |
|  | Acacetin-7-O-(6''-O-*α*-L-rhamnopyranosyl)-*β*-sophoroside |  | *V. jatamansi* | Roots and rhizomes | (Wang et al., 2010a; Tang et al., 2003) |
|  | Linarin / acacetin-7-O-rutinoside | Sedative and sleep-enhancing  Anticonvulsant | *V. officinalis*  *V. wallichii* | Roots and rhizomes | (Fernández et al., 2004; Thies, 1968) |
|  | Linarin-2-O-methylbutyrate |  | *V. wallichii* | Rhizomes | Glaser et al. (2015) |
|  | Hesperidin | Neuroprotective | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | 2*S* (-)-Hesperidin | Sedative and sleep-enhancing  Anticonvulsant | *V. officinalis*  *V. wallichii* | Roots and rhizomes | (Marder et al., 2003; Fernández et al., 2004; Thies, 1968) |
|  | Leachianone A | Anti-inflammatory | *V. jatamansi* | Roots and rhizomes | Wang et al. (2021b) |
|  | Isosakuranetin |  | *V. hardwickii* | Whole plants | Cai et al. (2015) |
|  | Hesperetin-7-O-*β*-rutinoside |  | *V. wallichii* | Roots and rhizomes | Thies, (1968) |
|  | Catechin |  | *V. jatamansi* | Roots and rhizomes | Jugran etval. (2019) |
|  | Linarin-isovalerianate |  | *V. wallichii* | Roots and rhizomes | Thies, (1968) |

**Table 4** Sesquiterpenoids isolated from the genus *Valeriana* and activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Compound names** | **Activities** | **Resources** | **Parts** | **References** |
|  | Madolin A | Neuroprotective | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | Madolin B | Neuroprotective | *V. officinalis* | Roots | Chen et al. (2013a) |
|  | Volvalerenal A | Neuroprotective | *V. officinalis* | Roots | (Wang et al., 2010; Chen et al., 2013a) |
|  | Volvalerenal B | Neuroprotective | *V. officinalis* | Roots | (Wang et al., 2010; Chen et al., 2013a) |
|  | Volvalerenal C | Neuroprotective | *V. amurensis*;  *V. officinalis* | Roots | (Wang et al., 2012a, 2010) |
|  | Volvalerenal D | Sedative | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | Volvalerenal F | Neuroprotective | *V. officinalis* | Roots | Chen et al. (2013a) |
|  | Volvalerenal G | Neuroprotective | *V. officinalis* | Roots | Chen et al. (2013a) |
|  | Isovolvalerenal D |  | *V. amurensis* | Roots and rhizomes | Wu et al. (2014) |
|  | Kissoone A |  | *V. fauriei*  *V. amurensis* | Roots and rhizomes | (Wu et al., 2014; Guo et al., 2006) |
|  | Kissoone B | Sedative  Neuroprotective | *V. officinalis*  *V. fauriei*  *V. amurensis* | Roots and rhizomes | (Wang et al., 2010; Wu et al., 2014; Guo et al., 2006) |
|  | Kissoone C | Sedative  Neuroprotective | *V. officinalis*;.  *V. fauriei*;  *V. amurensis* | Roots and rhizomes | (Wang et al., 2010; Wu et al., 2014; Guo et al., 2006) |
|  | Volvalerenic acid A |  | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | Heishuixiecaoline A | Neuroprotective | *V. amurensis* | Roots | Wang et al. (2012a) |
|  | Volvalerenic acid C |  | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | Heishuixiecaoline C | Neuroprotective | *V. amurensis*; | Roots | Wang et al. (2012a) |
|  | Volvalerenic acid B |  | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | Heishuixiecaoline B | Neuroprotective | *V. amurensis* | Roots | (Wang et al., 2012a; Chen et al., 2013a) |
|  | 1*β*-Hydroxyl-8*α*-acetoxyl-11,11-dimethyl-4-formyl-bicyclogermacren-*E*-4(5),10(14)-diene |  | *V. fauriei* | Roots | Liu et al. (2012) |
|  | Bicyclo[8,1,0]5*β*-hydroxyl-7*β*-1acetoxyl-5*α*,11,11′-trimethyl-*E*-1(10)-ene-4*α*,15-olide |  | *V. fauriei* | Roots | Liu et al. (2012) |
|  | Volvalerenal E |  | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | Volvalerenic acid D | Neuroprotective | *V. officinalis* | Roots | Chen et al. (2013a) |
|  | 1*β*,10*α*-Dihydroxyl-8*α*-acetoxyl-10*β*,11,11-trimethyl-4-formyl-bicyclogermacren-*E*-4(5)-ene |  | *V. fauriei* | Roots | Liu et al. (2012) |
|  | 11*α*H-gemacra-1(10)*E*,4*Z*-diene-3-one-12,6*α*-olide |  | *V. fauriei* | Roots | Liu et al. (2012) |
|  | Isobicyclogermacrenal | Sedative  Neuroprotective | *V. officinalis* | Roots | Wang et al. (2010c) |
|  | 13-Hydroxypatchoulol A |  | *V. stenoptera* | Roots and rhizomes | Dong et al. (2015a) |
|  | 11-*epi*-13-Hydroxypatchoulol A |  | *V. stenoptera* | Roots and rhizomes | Dong et al. (2015a) |
|  | Isointermedeol |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | Valeriananoid A |  | *V. jatamansi* | Roots and rhizomes | Lin et al. (2015) |
|  | Cyperusol |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Maaliol | Sedative  Neuroprotective | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | 4*β*,8a*β*-Dimethyl-6*β*-isopropenyl-3,4,4a*α*, 5,6,7,8,8*a*-octahydronaphthalen-1(2*H*)-one |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | 8-Hydroxy-patchouli alcohol |  | *V. jatamansi* | Roots | Liu et al. (2017) |
|  | 8-Acetoxypatchouli alcohol | Cytotoxic | *V. jatamansi* | Roots | Liu et al. (2017) |
|  | (3*R*)-3-Hydroxypatchoulol |  | *V. jatamansi* | Roots | Liu et al. (2017) |
|  | Patchouli alcohol |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | 8-Acetoxypatchoulol | Sedative  Neuroprotective | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | 9-Hydroxypatchoulol |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | 9-acetoxypatchoulol |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Valeriananoid B |  | *V. jatamansi* | Roots and rhizomes | Lin et al. (2015) |
|  | Valeriananoid C | Anticholinesterase | *V. jatamansi* | Roots and rhizomes | Lin et al. (2015) |
|  | Valeriananoid D |  | *V. jatamansi* | Roots | Dong et al. (2015b) |
|  | Valeriananoid E |  | *V. jatamansi* | Roots | Dong et al. (2015b) |
|  | Valeriananoid F |  | *V. jatamansi* | Roots | Tan et al. (2016) |
|  | Eudesm-11-en-5*a*-ol |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | 2-Naphthalenemethanol |  | *V. amurensis* | Whole plants | Xie et al. (2019) |
|  | Eremophila-1(10)-en-4*α*-ol |  | *V. stenoptera* | Roots and rhizomes | Dong et al. (2015a) |
|  | Valeranone |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Valerol A | Cytotoxic | *V. jatamansi* | Roots | (Liu et al., 2017; Dong et al., 2019) |
|  | *α*-Kessyl isovalerate |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | Valeracetate |  | *V. amurensis* | Roots and rhizomes | Jugran etval. (2019) |
|  | kessyl 3-acetate |  | *V. officinalis* | Roots | Wang et al. (2009a) |
|  | Hydroxyvalerenic acid |  | *V. jatamansi* | Roots and rhizomes | Jugran etval. (2019) |
|  | Acetoxyvalerenic acid |  | *V. jatamansi* | Roots and rhizomes | Jugran etval. (2019) |
|  | Valerenic acid |  | *V. jatamansi* | Roots and rhizomes | Jugran etval. (2019) |
|  | *E*-(-)-3,4-Epoxyvalerenal |  | *V. officinalis* | Roots | Wang et al. (2009a) |
|  | *E*-(-)-3,4-Epoxyvalerenyl acetate |  | *V. officinalis* | Roots | Wang et al. (2009a) |
|  | Mononorvalerenone |  | *V. officinalis* | Roots | Wang et al. (2009a) |
|  | 1-Naphthalenemethanol |  | *V. amurensis* | Whole plants | Xie et al. (2019) |
|  | Clovane-2*β*-isovaleroxy-9*α*-ol |  | *V. jatamansi* | Roots | Dong et al. (2015a) |
|  | 2*α*-acetoxy-1*α*,9*α*-oxidobisbol |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | Jatamansone |  | *V. jatamansi* | Roots and rhizomes | Jugran etval. (2019) |
|  | volvalerenone A |  | *V. officinalis* | Roots | Wang et al. (2010d) |
|  | 15-hydroxyspathulenol | Sedative | *V. amurensis* | Roots and rhizomes | Wu et al. (2014) |
|  | 4*α*,10*α*-epoxyaromadendrane |  | *V. officinalis* | Roots | Wang et al. (2009a) |
|  | 3*β*-Hydroxyl-*β*-(*cis*)-epoxide-*α*-guaiene |  | *V. stenoptera* | Roots and rhizomes | Dong et al. (2015a) |
|  | 1-Hydroxy-l,11,11-trimethyldecahydrocyclopropane azulene-10-one |  | *V. amurensis* | Roots and rhizomes | Wu et al. (2014) |
|  | Valerianin C |  | *V. fauriei* | Roots | Liu et al. (2012) |
|  | Globulol |  | *V. amurensis* | Roots and rhizomes | Wang et al. (2011) |
|  | Orientalol C |  | *V. officinalis* | Roots | Wang et al. (2011) |
|  | Anismol A |  | *V. officinalis* | Roots | Wang et al. (2011) |
|  | Valerilactones A | Neuroprotective | *V. jatamansi* | Roots | Jugran etval. (2019) |
|  | Valerilactones B | Neuroprotective | *V. jatamansi* | Roots | Jugran etval. (2019) |
|  | Bakkenollides B |  | *V. jatamansi* | Roots | Jugran etval. (2019) |
|  | Bakkenollides H | Neuroprotective | *V. jatamansi* | Roots | Jugran etval. (2019) |
|  | 11-Hydroxypogostol |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | Pogostol |  | *V. stenoptera* | Whole plants | Dong et al. (2015a) |
|  | Spatulenol |  | *V. officinalis* | Roots | Wang et al. (2011) |
|  | Caryophyllenol A | Sedative | *V. amurensis* | Roots and rhizomes | Wu et al. (2014) |
|  | Bisabola-7(14),10-dien-4*β*,5*β*,15-triol |  | *V. stenoptera* | Roots and rhizomes | Dong et al. (2015a) |
|  | (1*R*,2*R*,7*R*)-2-Acetoxyl-*β*-bisabolol |  | *V. fauriei* | Roots and rhizomes | Nishiya et al., 1994 |
|  | (1*R*,2*R*,7*R*)-2-Hydroxyl-*β*-bisabolol |  | *V. fauriei* | Roots and rhizomes | Nishiya et al., 1994 |
|  | *β*-Bisabolol |  | *V. amurensis* | Roots and rhizomes | Dong et al. (2019) |
|  | Epoxysesquithujene |  | *V. hardwickii* | Roots and rhizomes | Mathela et al. (2007) |
|  | Sesquithujenol |  | *V. hardwickii* | Roots and rhizomes | Mathela et al. (2007) |
|  | Sesquithujene |  | *V. hardwickii* | Roots and rhizomes | Mathela et al. (2007) |
|  | 1*S*,3*S*,4*S*,7*S*3,4-di-Hydroxy-bisabolol |  | *V. amurensis* | Whole plants | Xie et al. (2019) |
|  | 2-Ethylhexyl-4-hydroxybenzoate |  | *V. fauriei* | Roots | Liu et al. (2012) |
|  | Citroside A |  | *V. amurensis* | Roots and rhizomes | Wan et al. (2016) |

**Table S5.** Essential oil analyzed and identified from the genus *Valeriana*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Compound names** | **Resources** | **Parts** | **References** |
|  | Borneol | *V. officinalis*  *V. officinalis*  *V. amurensis*  *V. jatamansi*  *V. wallichii*  *V. hardwickii* | Roots and rhizomes | (Mathela et al., 2007; Zhou and Huang, 2008; Lunz and Stappen, 2021; Bos et al., 1997) |
|  | Bornyl acetate | *V. officinalis*  *V. officinalis*  *V. amurensis*  *V. wallichii*  *V. fauriei*  *V. hardwickii* | Roots and rhizomes | (Mathela et al., 2007; Zhou and Huang, 2008; Sati et al., 2005; Raal et al., 2008; Chung et al., 2012) |
|  | Bornyl isovalerate | *V. officinalis*  *V. amurensis*  *V. wallichii*  *V. fauriei* | Roots and rhizomes | (Mathela et al., 2007; Zhou and Huang, 2008; Bos et al., 1997; Chung et al., 2012) |
|  | Valeric acid | *V. officinalis*  *V. jatamansi*  *V. sisymbriifolia* | Roots and rhizomes | (Vishwakarma et al., 2016; Pirbalouti et al., 2015) |
|  | Z-*β*-Farnesene | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Valerenal | *V. officinalis* | Roots and rhizomes | (Lunz and Stappen, 2021; Raal et al., 2007) |
|  | Sesquiterpene alcohol C | *V. officinalis* | Roots and rhizomes | Lunz and Stappen, (2021) |
|  | allo-Aromadendrene | *V. officinalis*  *V. sisymbriifolia* | Roots and rhizomes  Aerial parts | (Lunz and Stappen, 2021; Raal et al., 2007; Javidnia et al., 2010) |
|  | Longiborneol acetate | *V. officinalis* | Roots and rhizomes | (Lunz and Stappen, 2021; Pavlović et al., 2004) |
|  | Valerianol | *V. officinalis* | Roots and rhizomes | (Raal et al., 2007; Pavlović et al., 2004; Maurya et al., 2021) |
|  | Hexanal | *V. wallichii* | Aerial parts  Roots and rhizomes | Sati et al. (2005) |
|  | *α*-Longipinene | *V. wallichii* | Aerial parts  Roots | (Sati et al., 2005; Mathela et al., 2005) |
|  | *β*-Longipinene | *V. jatamansi* | Roots | Verma et al. (2012) |
|  | Valerenolic acid | *V. officinalis* | Roots and rhizomes | Chen et al. (2000) |
|  | *α*-Pinene | *V. officinalis*  *V. amurensis*  *V. jatamansi*  *V. wallichii*  *V. hardwickii*  *V. sisymbriifolia*  *V. alliariifolia* | Roots and rhizomes  Aerial parts | (Sati et al., 2005; Taherpour et al., 2010; Lunz and Stappen, 2021; Pirbalouti et al., 2015; Ding et al., 2011) |
|  | *β*-Pinene | *V. officinalis*  *V. amurensis*  *V. jatamansi*  *V. wallichii*  *V. alliariifolia* | Roots and rhizomes | (Lunz and Stappen, 2021; Taherpour et al., 2010) |
|  | Phellandrene | *V. officinalis*  *V. alliariifolia* | Roots and rhizomes | (Taherpour et al., 2010; Bos et al., 2000) |
|  | Limonene | *V. officinalis*  *V. amurensis*  *V. wallichii*;  *V. sisymbriifolia*; *V. alliariifolia* | Aerial parts  Roots and rhizomes | (Lunz and Stappen, 2021; Sati et al., 2005; Taherpour et al., 2010; Bos et al., 2000) |
|  | *α*-Terpineol | *V. officinalis*  *V. amurensis*  *V. jatamansi*  *V. wallichii*  *V. sisymbriifolia*  *V. alliariifolia* | Aerial parts  Roots and rhizomes | (Bos et al., 1997; Javidnia et al., 2010; Taherpour et al., 2010) |
|  | *γ*-Terpinene | *V. officinalis*  *V. wallichii*  *V. alliariifolia* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Taherpour et al., 2010; Bos et al., 2000) |
|  | 7-Tetracyclo [6.2.1.0(3.8)0(3.9)] undecanol, 4,4,11,11-tetramethyl | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Patchoulane | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Terpinolene | *V. officinalis*  *V. wallichii*  *V. alliariifolia*  *Valeriana italica* Lam. | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Taherpour et al., 2010; Bos et al., 2000; Sundaresan et al., 2012) |
|  | *β*-Caryophyllene | *V. wallichii*  *V. sisymbriifolia*  *V. alliariifolia* | Aerial parts  Roots | (Sati et al., 2005; Javidnia et al., 2010; Taherpour et al., 2010) |
|  | *γ*-Selinene | *V. alliariifolia* | Aerial parts | Taherpour et al. (2010) |
|  | *α*-Santalene | *V. jatamansi*  *V. wallichii* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Thusoo et al., 2014; Irshad et al., 2012) |
|  | 𝛽-Vatirenene | *V. jatamansi* | Roots |  |
|  | Widdrene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 1,3,8-p-Methatrine | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Kessane | *V. officinalis*  *V. jatamansi*  *V. wallichii* | Aerial parts  Roots and rhizomes | (Lunz and Stappen, 2021; Raina and Negi, 2015; Lokar and Moneghini, 1989) |
|  | Elemol | *V. officinalis* | Aerial parts | (Raina and Negi, 2015; Singh et al., 2013) |
|  | Bicyclo [7.2.0] undec-4-ene, 4,11,11-trimethyl-8-methylene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 2-Pentylfuran | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | n-Amylisovalerate | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Cyperene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Azulene | *V. jatamansi* | Roots and rhizomes | Alfaro-Romero et al. (2016) |
|  | trans-Sesquisabinenehydrate | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Anethole | *V. officinalis* | Roots | Dyayiya et al. (2016) |
|  | Hesperitinic acid | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | 2,5-Bornanediol | *V. officinalis* | Roots | Dyayiya et al. (2016) |
|  | Hinesol | *V. officinalis* | Roots and rhizomes  Aerial parts | (Bos et al. 2000; Raina and Negi, 2015) |
|  | Eudesma-3,7(11)-diene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 2-Hydroxycupelene | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Camphene | *V. officinalis*  *V. amurensis*  *V. wallichii*  *Valeriana capensis* Thunb. (*V. capensis*)  *Valeriana tuberosa* L. (*V. tuberosa*) | Roots and rhizomes | (Raal et al., 2007; Maurya et al., 2021; Sundaresan et al., 2012; Verma et al., 2011) |
|  | *α*-Copaen-11-ol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | cis-Linalool oxide | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Caryophyllene oxide | *V. jatamansi*  *V. tuberosa* | Roots | (Sundaresan et al., 2012; Verma et al., 2011) |
|  | Myrcene | *V. officinalis*  *V. jatamansi*  *V. wallichii*  *V. italica* | Aerial parts  Roots | (Sundaresan et al., 2012; Singh et al., 2013; Jugran et al., 2019) |
|  | Phytol | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Benzaldehyde | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | *γ*-Curcumene | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | 15-Acetoxyvaleranone | *V. officinalis*  *V. italica* | Roots and rhizomes | (Lunz and Stappen, 2021; Sundaresan et al., 2012) |
|  | Verticiol | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Neoclovene oxide | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Hexadecanoic acid | *V. officinalis*  *V. tuberosa*  *V. italica* | Roots  Aerial parts | (Raal et al., 2008; Sundaresan et al., 2012) |
|  | *α*-Curcumene | *V. officinalis*;  *V. wallichii* | Roots | (Bos et al., 1997; Raal et al., 2008) |
|  | 1,1,4a-Trimethyl-5,6-dimethylenedecahydronaphthalene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Epiglobulol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Nonacosane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Camphor | *V. officinalis*  *V. amurensis*  *V. wallichii* | Roots and rhizomes | Lunz and Stappen, (2021)  Pavlović et al. (2004) |
|  | trans-*β*-Farnesene | *V. officinalis* | Roots and rhizomes | Raina and Negi, (2015) |
|  | Caryophyllene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Palustrol | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Valencene | *V. officinalis*  *V. capensis*  *V. eallichii* | Roots and rhizomes | (Lunz and Stappen, 2021; Mathela et al., 2005) |
|  | Guaiacol | *V. jatamansi* | Roots and rhizomes | Rawat et al. (2017) |
|  | Naphthalene | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Guaiol | *V. jatamansi*  *V. officinalis* | Roots and rhizomes | (Rawat et al., 2017; Chen et al., 2015) |
|  | Valeric acid, 4-pentadecyl ester | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Myrtenol | *V. officinalis*  *V. officinalis* | Roots and rhizomes | (Bos etb al., 2000; Raina and Negi, 2015) |
|  | Aromadendrene oxide-(2) | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | cis-Sesquisabinene hydrate | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Sabinene | *V. officinalis*  *V. officinalis*  *V. amurensis*  *V. wallichii* | Roots and rhizomes | (Bos et al. 1997, 2000; Pavlović et al., 2004; Du et al., 2006) |
|  | Tetracosane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Ledol | *V. officinalis*  *V. officinalis* | Roots and rhizomes | (Raal et al., 2008; Du et al., 2006) |
|  | 2-(5-hydroxypent-2-ynyl)-3-oxocyclopentyl] thioacetic acid, s-t-butyl ester | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Citronellol | *V. officinalis* | Roots and rhizomes | Pavlović et al. (2004) |
|  | *α*-Farnesene | *V. officinalis*  *V. officinalis*  *V. amurensis* | Roots and rhizomes | (Raal et al., 2008; Yu et al., 20011) |
|  | Viridiflorene | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | Terpin-4-ol | *V. italica*  *V. tuberosa* | Roots  Aerial parts | Sundaresan et al. (2012) |
|  | Bornyl hexanoate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Phenethylisovalerate | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | cis-2,6-Dimethyl-2,6-octadiene | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Isovaleric acid | *V. officinalis*  *V. officinalis*  *V. jatamansi*  *V. sisymbriifolia* | Roots and rhizomes  Aerial parts | (Raal et al., 2008; Pirbalouti et al., 2015; Maurya et al., 2021; Irshad et al., 2012) |
|  | Juniper camphor | *V. jatamansi* | Roots and rhizomes | Alfaro-Romero et al. (2016) |
|  | *α*-Himachalene | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Eremophilene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Curcumene | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | epi-*β*-Santalene | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Propyl valerate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Muurolene | *V. jatamansi*  *V. italica* | Roots | (Sundaresan et al., 2012; Irshad et al, 2012) |
|  | Dehydro-aromadendrene | *V. jatamansi*  *V. wallichii* | Roots and rhizomes  Aerial parts | (Sati et al., 2005; Mathela et al., 2005; Irshad et al., 2012) |
|  | *α*-Elemol | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | *β*-patchoulane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Butylatedhydroxy toluene | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | *α*-Fenchene | *V. officinalis*  *V. italica* | Roots and rhizomes | (Pavlović et al., 2007; Maurya et al., 2021; Bos et al., 2000; Sundaresan et al., 2012) |
|  | 3-Iodomethyl-3,6,6-trimethyl-cyclohexene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Myrtle acetate | *V. officinalis*  *V. amurensis* | Aerial parts  Roots | (Raal et al., 2007; Raina and Negi, 2015) |
|  | *β*-Eurjunene | *V. jatamansi* | Whole plants | Pavlović et al. (2007) |
|  | Selinadiene alcohol | *V. officinalis* | Roots | Raal et al. (2008) |
|  | cis-Farnesol | *V. jatamansi* | Roots and rhizomes | Alfaro-Romero et al. (2016) |
|  | 1-Isopropenyl-3,3-dimethyl-5-(3-methyl-1-oxo-2-butenyl) cyclopentane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Isoquinolin-6,7-diol-1-carboxylic acid | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Cycloheptane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | trans-Pinocarvyl acetate | *V. officinalis* | Roots and rhizomes | (Raal et al., 2008; Pavlović et al., 2007) |
|  | *β*-Bisabolene | *V. sisymbriifolia*  *V. officinalis* | Aerial parts | (Javidnia et al., 2010; Singh et al., 2013) |
|  | *β*-Atlantone | *V. sisymbriifolia* | Aerial parts | Pirbalouti et al. (2015) |
|  | Eudesma-4(14),11-diene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | cis-Adamantane-2-carboxylic acid | *V. jatamansi* | Roots and rhizomes | Pandian and Nagarajan, (2015) |
|  | Glyceryllinolenate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 14-Hydroxy-9-epi-(E)-caryophyllene | *V. sisymbriifolia* | Aerial parts | Pirbalouti et al. (2015) |
|  | *γ*-Eudesmol | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | Methyl *β*-methylvalerate | *V. officinalis* | Roots | Dyayiya et al. (2016) |
|  | Isoestragol | *V. officinalis* | Roots | Dyayiya et al. (2016) |
|  | Bornyl butyrate | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | *α*-Humulene | *V. officinalis*  *V. jatamansi*  *V. sisymbriifolia*  *V. tuberosa*  *V. italica* | Whole plants  Aerial parts  Roots | (Javidnia et al., 2010; Sundaresan et al., 2012; Agnihotri et al., 2011; Bhatt et al., 2012) |
|  | 2,6-Diamino-4-cyclohexyl-4H-thiopyran-3,5-dicarbonitrile | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Methyl 9,12,15-octadecatrienoate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Nonanal | *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | *α*-Eudesmol | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | (*Z*)-*β*-Ocimene | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | Pacifigoriadiene isomer A | *V. officinalis* | Roots | Raal et al. (2008) |
|  | (*E*)-*β*-Damascenone | *V. officinalis*;  *V. montana*;  *Valeriana braunii-blanquetii* (*V. braunii-blanquetii*);  *V. tuberosa* | Aerial parts | (Sundaresan et al., 2012; Raina and Negi, 2015) |
|  | Dodecanoic acid | *V. officinalis*  *V. braunii-blanquetii* | Aerial parts | Raina and Negi, (2015) |
|  | *β*-Humulene | *V. officinalis* | Roots and rhizomes | Wang et al. (2010) |
|  | Carotol | *V. jatamansi* | Whole plants | Agnihotri et al. (2011) |
|  | Ledane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Hexanoate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | *γ*-Muurolene | *V. italica*  *V. jatamansi* | Roots and rhizomes | (Verma et al., 2012; Sundaresan et al., 2012) |
|  | Germacrene B | *V. jatamansi*  *V. officinalis* | Whole plants | (Pavlović et al., 2007; Agnihotri et al., 2011) |
|  | Palmitic acid | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Germacrene D | *V. officinalis*  *V. italica* | Roots | (Raal et al., 2008; Sundaresan et al., 2012) |
|  | *δ*-3-Carene | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | Zingiberene | *V. officinalis*  *V. tuberosa* | Roots  Aerial parts | (Raal et al., 2008; Sundaresan et al., 2012) |
|  | Pentadecane | *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | Terpinen-4-ol | *V. officinalis* | Roots and rhizomes | Pavlović et al. (2007) |
|  | Megastigma-4,6(e),8(z)-triene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | cis-*β*-Faresene | *V. jatamansi* | Whole plants | Agnihotri et al. (2011) |
|  | *δ*-Elemene | *V. officinalis*  *V. jatamansi*  *V. officinalis*  *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | *γ*-Elemene | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | 3-Methylvaleric acid | *V. officinalis*  *V. officinalis*  *V. jatamansi*  *V. wallichii*  *V. sisymbriifolia* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Pirbalouti et al., 2015; Pandian and Nagarajan, 2015; Thusoo et al., 2014) |
|  | Methyl 10,13-octadecadiynoate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 4-Hydroxy | *V. jatamansi* | Roots and rhizomes | Pandian and Nagarajan, (2015) |
|  | Germacrene-D-4-ol | *V. italica* | Roots | Sundaresan et al. (2012) |
|  | *β*-Methasone valerate | *V. jatamansi* | Roots and rhizomes | Pandian and Nagarajan, (2015) |
|  | Methyl palmitate | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | 10-epi-*γ*-Eudesmol | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | Selin-11-en-4α-ol | *V. braunii-blanquetii* | Aerial parts | Raina and Negi, (2015) |
|  | Benzyl isovalerate | *V. jatamansi* | Roots and rhizomes | Pandian and Nagarajan, (2015) |
|  | 3-p-Menthene | *V. wallichii* | Aerial parts  Roots | Sati et al. (2005) |
|  | cis-Nerolidol | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Methyl thymol | *V. wallichii*  *V. officinalis* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Bos et al., 2000) |
|  | Methyl carvacrol | *V. wallichii*  *V. officinalis* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Bos et al., 2000) |
|  | Eicosane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | trans-α-Bergamotene | *V. officinalis* | Roots and rhizomes | Pavlović et al. (2007) |
|  | 14-Oxononadec-10-enoic acid, methyl ester | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 6,7-Dimethoxy-2-tetralone | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Carvotanacetone | *V. wallichii* | Aerial parts  Roots and rhizomes | (Bos et al., 1997; Sati et al., 2005) |
|  | Thymyl acetate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Thymyl isovalerate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Nerolidol | *V. jatamansi* | Roots and rhizomes | (Pandian and Nagarajan, 2015; Chen et al., 2015) |
|  | Methyl thymol ether | *V. wallichii*  *V. jatamansi*  *V. italica*  *V. hardwickii* | Roots and rhizomes | (Mathela et al., 2007; Bos et al., 1997; Sundaresan et al., 2012) |
|  | Khusilic acid | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Muurolol | *V. officinalis*  *V. braunii-blanquetii* | Aerial parts | Raina and Negi, (2015) |
|  | 2-Phenylethyl hexanoate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Copaene | *V. jatamansi* | Roots | Lopes et al. (2005) |
|  | *β*-Patchoulene | *V. officinalis*  *V. jatamansi*  *V. wallichii* | Roots and rhizomes | (Bos et al., 1997; Lokar et al., 1989) |
|  | Methyl eugenol | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Estra-1,3,5(10)-trien-17*β*-ol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Deoxysericealactone | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | *α*-Tocopherol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *β*-Elemene | *V. jatamansi*  *V. officinalis*  *V. officinalis*  *V. wallichii* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Mathela et al., 2005; Wang et al., 2010) |
|  | *α*-Elemene | *V. officinalis* | Roots and rhizomes | Wang et al. (2010) |
|  | Ethyl 9,9-diformylnona-2,4,6,8-tetraenoate | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Thymol | *V. officinalis*  *V. italica* | Roots and rhizomes | (Bos et al., 2000; Sundaresan et al., 2012) |
|  | *γ*-Sitosterol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Cedren-13-ol, 8- | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Selina-4,11-diene | *V. officinalis* | Roots and rhizomes | Wang et al. (2010) |
|  | Selinene isomer | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | *β*-Helmiscapene | *V. officinalis* | Roots and rhizomes | Wang et al. (2010) |
|  | 1,2-Dissoproylbenzene | *V. officinalis* | Roots and rhizomes | Wang et al. (2010) |
|  | Benzyl benzoate | *V. tuberosa*  *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | Isovalerate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Decanal | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Chiapin B | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Gurjunene | *V. officinalis*  *V. officinalis*  *V. amurensis*  *V. jatamansi*  *V. wallichii* | Roots  Aerial parts | (Lunz and Stappen, 2021; Javidnia et al., 2010) |
|  | *β*-Gurjunene | *V. officinalis*  *V. wallichii*  *V. sisymbriifolia* | Aerial parts  Roots and rhizomes | (Lunz and Stappen, 2021; Sati et al., 2005; Javidnia et al., 2010; Thusoo et al., 2014) |
|  | Murolan-3,9(11)-diene-10-peroxy | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *γ*-Gurjunene | *V. officinalis*  *Valeriana edulis* Nutt. (*V. edulis*  ) | Roots | Dyayiya et al. (2016) |
|  | Artemiseole | *V. officinalis*;  *V. edulis*;  *V. capensis* | Roots | (Dyayiya et al., 2016; Rawat et al., 2017) |
|  | Cyclohexadecane | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Citronellyl acetate | *V. officinalis* | Roots and rhizomes | Pavlović et al. (2007) |
|  | *γ*-Terpinene-7-al | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |
|  | Tumerol | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Methyl isovalerate | *V. officinalis*  *V. edulis* | Roots | Dyayiya et al. (2016) |
|  | Estragole | *V. officinalis*  *V. edulis* | Roots | Dyayiya et al. (2016) |
|  | Methyl (10E)-10-heptadecen-8-ynoate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Isospathulenol | *V. italica* | Roots | Sundaresan et al. (2012) |
|  | Octadecane | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Ethyl isovalerate | *V. officinalis*  *V. edulis* | Roots | Dyayiya et al. (2016) |
|  | *α*-Cubenene | *V. italica* | Roots | Sundaresan et al. (2012) |
|  | 2,6-Dimethyl-8-(tetrahydropyran-2-yloxy)-octa-2,6-dien-1-ol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Isopentyl isovalerate | *V. edulis*  *V. jatamansi* | Roots and rhizomes | (Dyayiya et al., 2016; Jugran et al., 2019) |
|  | epi-*α*-Cadinol | *V. officinalis*  *V. wallichii* | Roots  Aerial parts | (Lunz and Stappen, 2021; Sati et al., 2005) |
|  | 1,4-Dimethoxy benzene | *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | trans-Caryophyllene | *V. officinalis*  *V. officinalis*  *V. jatamansi*  *V. alliariifolia*  *V. italica*  *V. tuberosa*  *V. hardwickii* | Roots and rhizomes  Aerial parts | (Mathela et al., 2007; Taherpou et al., 2010; Sundaresan et al., 2012; Chen et al., 2015) |
|  | 9-Methyl-Z, Z-10,12-hexadecadien-1-ol acetate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Squalene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Calarene | *V. anurensis*  *V. jatamansi*  *V. alliariifolia* | Aerial parts  Roots | (Taherpou et al., 2010; Lokar et al., 1989; Liu e al., 2013) |
|  | *α*-Guaiene | *V. officinalis*  *V. officinalis*  *V. jatamansi*  *V. wallichii* | Roots and rhizomes | (Raal et al., 2008; Thusoo et al., 2014; Irshad et al., 2012; Lokar et al., 1989; Dyayiya et al., 2016) |
|  | trans-*β*-Guaiene | *V. wallichii* | Aerial parts  Roots | Sati et al. (2005) |
|  | Bulnesol | *V. wallichii*  *V. officinalis* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Mathela et al., 2005; Raina and Negi, 2015) |
|  | (Z)-*γ*-Bisabolene | *V. wallichii* | Aerial parts  Roots | Sati et al. (2005) |
|  | 2-Phenylethyl isovaltrate | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | Desmethoxy encecalin | *V. wallichii* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Mathela et al., 2005) |
|  | Dihydro-eudesmol | *V. wallichii* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Mathela et al., 2005) |
|  | Laurenene | *V. wallichii* | Aerial parts  Roots and rhizomes | (Sati et al., 2005; Mathela et al., 2005) |
|  | Xanthorrhizol | *V. jatamansi*  *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Xanthorrhizol isomer | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Spathulenol | *V. officinalis*  *V. amurensis*  *V. jatamansi*  *V. sisymbriifolia*  *V. alliariifolia* | Roots and rhizomes | (Raal et al., 2008; Maurya et al., 2021; Samaneh et al., 2010; Lokar et al., 1989) |
|  | Clocortolone pivalate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | trans-Isoliminene | *V. officinalis*  *V. sisymbriifolia*  *V. alliariifolia* | Roots and rhizomes | Samaneh et al. (2010) |
|  | Vulgarone B | *V. capensis*  *V. sisymbriifolia*  *V. alliariifolia* | Roots and rhizomes | (Samaneh et al., 2010; Rawat et al., 2017) |
|  | Globulol | *V. italica*  *V. officinalis* | Roots | (Raal et al., 2008; Sundaresan et al., 2012) |
|  | Patchoulol | *V. officinalis*  *V. jatamansi* | Roots | (Irshad et al., 2012; Wang et al., 2010) |
|  | Kessanyl acetate | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | Kessyl acetate | *V. officinalis*  *V. wallichii* | Roots and rhizomes | (Bos et al., 1997; Du et al., 2006) |
|  | Kessyl glycol | *V. officinalis* | Roots and rhizomes | Chen et al. (2000) |
|  | *α*-Kessyl alcohol | *V. officinalis*  *V. officinalis* | Roots and rhizomes | Wang et al. (2010) |
|  | Guaiane epoxide | *V. jatamansi* | Roots | Verma et al. (2011) |
|  | Tricyclene | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | C15H26 | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | Linalool | *V. officinalis*  *V. amurensis*  *V. wallichii*  *V. italica*  *Valeriana minutiflora* Hand.-Mazz. (*V. minutiflora*) | Roots and rhizomes  Aerial parts | (Bos et al., 1997; Bos et al., 2000; Sundaresan et al., 2012; Fernández et al., 2015) |
|  | *β*-Ionone | *V. officinalis*;  *Valeriana montana* L. (*V. montana*) | Aerial parts | (Raina and Negi, 2015; Singh et al., 2013) |
|  | allo-Aromadendrene-epoxide | *V. sisymbriifolia* | Aerial patrs | Pirbalouti et al. (2015) |
|  | Cedrane | *V. amurensis*  *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | (E)-*β*-Lonone | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | Eicosanoic acid | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Furfural | *V. italica*  *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Benzenacetaldeyde | *V. italica*  *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Faurinone | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | g-Muurolene | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | C15H24 | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | Tetradecanoic acid | *V. tuberosa* | Aerial parts | Sundaresan et al. (2012) |
|  | Neophytadiene | *V. tuberosa*  *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | C15H24O2 | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | Heneicosane | *V. tuberosa*  *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | *α*-Thujene | *V. officinalis* | Roots and rhizomes | (Fokialakis et al., 2002; Bos et al., 2000) |
|  | Myrtenyl isovalerate | *V. officinalis* | Roots and rhizomes | (Raal et al., 2007; Bos et al., 2000) |
|  | Sesquiterpene alcohol | *V. officinalis*  *V. fauriei* | Roots and rhizomes | (Chung et al., 2012; Raal et al., 2007) |
|  | *β*-Sesquiphellandrene | *V. fauriei* | Roots and rhizomes | Chung et al. (2012) |
|  | *γ*-Murolene | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | Cedrol | *V. fauriei* | Roots and rhizomes | Chung et al. (2012) |
|  | Linalyl isoacetate | *V. officinalis* | Roots | Raal et al. (2008) |
|  | *β*-Bisabolol | *V. officinalis*  *V. jatamansi* | Rhizomes | (Maurya et al., 2021; Bos et al., 2000; Pandian and Nagarajan, 2015) |
|  | *α*-Cedrene | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | C15H26O | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | Iso-Propyl ios-valerate | *V. officinalis*  *V. edulis* | Roots | Dyayiya et al. (2016) |
|  | Tricosane | *V. tuberosa*  *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | Behenic acid | *V. edulis* | Roots and rhizomes | Chen et al. (2000) |
|  | trans-Valerenyl acetate | *V. officinalis* | Roots and rhizomes | (Lunz and Stappen, 2021; Bos et al., 2000) |
|  | Mirtenyl acetate | *V. officinalis*  *V. capensis* | Roots and rhizomes | (Lunz and Stappen, 2021; Rawat et al., 2017) |
|  | trans-Valerenyl isovaleratet | *V. officinalis* | Roots | Raal et al. (2008) |
|  | 4-Terpineol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | a-Copaene | *V. jatamansi* | Roots and rhizomes | (Jugran et al., 2019; Liu e al., 2013) |
|  | Valerenyl hexanoate | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | *β*-Eudesmol | *V. officinalis*  *V. capensis* | Roots | (Raal et al., 2008; Rawat et al., 2017; Lopes et al.; 2005) |
|  | Geranyl valerate | *V. officinalis* | Roots | Raal et al. (2008) |
|  | Valerenol | *V. officinalis* | Roots | Lopes et al. (2005) |
|  | Aromadendrene | *V. officinalis*  *V. sisymbriifolia* | Roots  Aerial parts | (Raal et al., 2008; Javidnia et al., 2012) |
|  | Geranyl isovalerate | *V. officinalis* | Roots | Raal et al. (2008) |
|  | Nootkatone | *V. officinalis* | Roots and rhizomes | Chen et al. (2015) |
|  | Patchoulyl acetate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | *β*-Cymene | *V. wallichii*  *V. hardwickii* | Aerial parts  Roots and rhizomes | (Mathela et al., 2007; Bos et al., 1997; Sati et al., 2005) |
|  | *α*-Terpinene | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | 1,8-Cineole | *V. wallichii*  *V. alliariifolia*  *V. officinalis* | Roots and rhizomes  Aerial parts | (Bos et al., 1997; Taherpou et al., 2010; Singh et al., 2013) |
|  | Geraniol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *β*-Acoradienol | *V. jatamansi* | Roots | Verma et al. (2011) |
|  | d-Cadinene | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | o-Cymene | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | p-Cymene | *V. officinalis*  *V. jatamansi*  *V. sisymbriifolia*  *V. alliariifolia* | Roots and rhizomes | (Raal et al., 2008; Samaneh et al., 2010) |
|  | Carene | *V. officinalis*  *V. officinalis* | Roots and rhizomes | (Chen et al., 2015; Yu et al., 2011) |
|  | Furfuryl 3-methylbutanoate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Mualiol | *V. jatamansi* | Roots and rhizomes | Ming et al. (1994) |
|  | Nelolidol | *V. jatamansi* | Roots and rhizomes | Ming et al. (1994) |
|  | trans-Sabinyl acetate | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | 1,2,6-Hexanetriol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Terpinyl acetate | *V. officinalis*  *V. fauriei* | Roots and rhizomes | (Chung et al., 2012; Bos et al., 2000; Yu et al., 2011) |
|  | Terpinen-1-ol | *V. officinalis*  *V. wallichii* | Roots and rhizomes | (Bos et al., 1997; Bos et al., 2000) |
|  | cis-*α*-Bisabolene | *V. sisymbriifolia* | Roots and rhizomes | Pirbalouti et al. (2015) |
|  | Docosane | *V. tuberosa*  *V. italica* | Aerial parts | Sundaresan et al. (2012) |
|  | Carvacrol methyl ether | *V. italica*  *V. wallichii*  *V. hardwickii* | Roots and rhizomes | (Mathela et al., 2009; Bos et al., 1997; Sundaresan et al., 2012) |
|  | a-Cadinene | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | Methyl thymohydroquinone | *V. hardwickii* | Roots and rhizomes | Mathela et al. (2007) |
|  | Cyclolongifolene oxide | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Copaene | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Ledene oxide-(II) | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 1,8-Cineol | *V. jatamansi* | Roots | Liu e al. (2013) |
|  | Carveol | *V. officinalis*  *V. capensis* | Roots | (Raal et al., 2008; Rawat et al., 2017) |
|  | Sabinol | *V. officinalis* | Roots and rhizomes | Chen et al. (2015) |
|  | Carvacryl acetate | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | Isobutyl valerate | *V. officinalis*  *V. edulis* | Roots and rhizomes | (Bos et al., 2000; Samaneh et al., 2010) |
|  | Eugenol | *V. officinalis*  *V. wallichii*  *V. tuberosa*  *V. minutiflora* | Roots and rhizomes  Aerial parts | (Sati et al., 2005; Bos et al., 2000), (Sundaresan et al., 2012; Fernández et al., 2015) |
|  | Eugenyl acetate | *V. officinalis* | Aerial parts | Singh et al. (2013) |
|  | Geranial | *V. minutiflora* | Aerial parts | Fernández et al. (2015) |
|  | Piperitone | *V. capensis* | Roots | Rawat et al. (2017) |
|  | p-Menth-l-en-9-al | *V. minutiflora* | Aerial parts | Fernández et al. (2015) |
|  | Santalol | *V. jatamansi* | Roots | Thusoo et al. (2014) |
|  | 2*α*,4a*β*,8a*β*-Decahydro-2-naphthalenol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Farnesol | *V. officinalis* | Roots | Lunz and Stappen, (2021) |
|  | *α*-Panasinsene | *V. officinalis* | Roots and rhizomes | (Lunz and Stappen, 2021; Wang et al., 2010) |
|  | Isoborneol | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | Longipinene | *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | 2,6-Dimethoxy-p-cymene | *V. officinalis*  *V. wallichii* | Roots and rhizomes | (Raal et al., 2008; Bos et al., 2000) |
|  | Dehydroisolongifolene | *V. officinalis* | Roots | Raal et al. (2008) |
|  | Isoamyl isovalerate | *V. officinalis* | Roots and rhizomes | (Raal et al., 2008; Bos et al., 2000) |
|  | Turmerol | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | C15H26O2 | *V. jatamansi* | Roots and rhizomes | Fokialakis et al. (2002) |
|  | Valerenal isomer | *V. jatamansi* | Roots and rhizomes | Fokialakis et al. (2002) |
|  | Curcuphenyl acetate | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | C17H24O2 (Xanthorrhizyl acetate) | *V. jatamansi* | Roots and rhizomes | Fokialakis et al. (2002) |
|  | *α*-Kessyl acetate | *V. jatamansi* | Roots and rhizomes | Bos et al. (1997) |
|  | Dimethyl | *V. sisymbriifolia* | Roots and rhizomes | Fokialakis et al. (2002) |
|  | p-Cresol | *V. sisymbriifolia* | Roots and rhizomes | Pirbalouti et al. (2015) |
|  | 2,6-Dimethyl anisole | *V. sisymbriifolia* | Roots and rhizomes | Pirbalouti et al. (2015) |
|  | 2,5-Dimethoxy-p-cymene | *V. wallichii*  *V. officinalis* | Roots and rhizomes | (Bos et al., 1997; Pavlović et al., 2007) |
|  | Geranyl acetate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Humulene-oxide | *V. jatamansi* | Whole plants | Agnihotri et al. (2011) |
|  | *γ*-Patchoulene | *V. jatamansi*  *V. wallichii* | Roots and rhizomes | (Bos et al., 1997; Raal et al., 2008) |
|  | *α*-Calacorene | *V. officinalis* | Roots and rhizomes | Bos et al. (2000) |
|  | Methyl linoleate | *V. hardwickii* | Roots | Das et al. (2011) |
|  | *δ*-Guaiene | *V. jatamansi* | Roots | Bhatt et al. (2012) |
|  | Seychellene | *V. officinalis*  *V. jatamansi*  *V. wallichii*  *V. officinalis* | Roots and rhizomes | (Pandian and Nagarajan, 2015; Raina and Negi, 2015; Lokar et al., 1989; Bhatt et al., 2012) |
|  | *α*-Bulnesene | *V. jatamansi*  *V. officinalis* | Roots and rhizomes | (Raal et al., 2008; Jugran et al., 2019) |
|  | *γ*-Cadinene | *V. officinalis* | Roots | Raal et al. (2008) |
|  | *δ*-Cadinene | *V. wallichii*  *V. officinalis*  *V. jatamansi* | Roots and rhizomes | (Bos et al., 1997; Raal et al., 2008), Liu e al. (2013) |
|  | Viridiflorol | *V. officinalis*  *V. jatamansi*  *V. sisymbriifolia*  *V. italica* | Roots and rhizomes | (Raal et al., 2008; Pirbalouti ett al., 2015; Sundaresan et al., 2012; Thusoo et al., 2014; Lokar et al., 1989) |
|  | DL-limonene | *V. jatamansi* | Roots and rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Patchoulene | *V. jatamansi* | Roots | Jugran et al. (2019) |
|  | I-Propyl 6,9,12-hexadecatrienoate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Aristolone | *V. officinalis*  *V. officinalis*  *V. jatamansi* | Roots and rhizomes | Jugran et al. (2019) |
|  | Eucalyptollin | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Isopatchoulane | *V. jatamansi* | Roots and rhizomes | Alfaro-Romero et al. (2016) |
|  | Drimenol | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Isolongifolen-5-one | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | cis-*β*-Guaiene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Calarene-*β*-gurjunene | *V. jatamansi* | Roots and rhizomes | Thusoo et al. (2014) |
|  | trans-α-Bergomotene | *V. wallichii* | Aerial parts  Roots | Sati et al. (2005) |
|  | Cryptofauronyl acetate | *V. wallichii* | Roots and rhizomes | Bos et al. (1997) |
|  | Pacifigoriadiene isomer B | *V. officinalis* | Roots | Raal et al. (2008) |
|  | Humulene epoxide-Ⅱ | *V. jatamansi* | Roots | Agnihotri et al. (2011) |
|  | *γ*-Terpinene | *V. jatamansi* | Roots | Fokialakis et al. (2002) |
|  | epi-Bicyclosesquiphellandrene | *V. officinalis* | Roots | Raal et al. (2008) |
|  | *β*-Cubebene | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | *α*-cis-Bergamotene | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Curcuphenol isomer | *V. jatamansi* | Rhizomes | (Bos et al., 1997; Mathela et al., 2009) |
|  | Kanokonylacetate | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Baldrinal | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Veridiflaral | *V. jatamansi* | Roots | Bhatt et al. (2012) |
|  | 4-Methoxy-8-pentyl-1-naphthoic acid | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | Selina-3,7(11)-dien | *V. jatamansi* | Roots | Liu e al. (2013) |
|  | 4-Terpineal | *V. jatamansi* | Roots | Bhatt et al. (2012) |
|  | Carvacrol | *V. italica*  *V. capensis* | Roots | (Sundaresan et al., 2012; Rawat et al., 2017) |
|  | *δ*-Selinene | *V. officinalis*  *V. officinalis*  *V. jatamansi* | Aerial parts | Taherpour et al. (2010) |
|  | Phenylethyl alcohol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Menthone | *V. officinalis* | Roots | Raal et al. (2008) |
|  | Bornylvalerate | *V. jatamansi* | Rhizomes | Fokialakis et al. (2002) |
|  | 1-Heptatriacotanol | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | 7-epi-*α*-Selinen | *V. officinalis*  *V. jatamansi* | Roots and rhizomes | (Raal et al., 2008; Thusoo et al., 2014) |
|  | 6-(1-Hydroxymethylvinyl)-4,8a-dimethyl-3,5,6,7,8,8a-hexahydro-1h-naphthalen-2-one | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Maaliol | *V. officinalis*  *V. jatamansi*  *V. wallichii* | Roots and rhizomes  Aerial parts | (Sati et al., 2005; Raal et al., 2008), (Maurya et al., 2021; Thusoo et al., 2014) |
|  | Ethyl valerate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | (–)-*α*-Selinene | *V. jatamansi* | Roots and rhizomes | Pandian and Nagarajan, (2015) |
|  | Longifolenaldehyde | *V. jatamansi* | Roots and rhizomes | Alfaro-Romero et al. (2016) |
|  | *α*-Zingiberene | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Limonen-6-ol, pivalate | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | Patchouli alcohol | *V. officinalis*  *V. jatamansi*  *V. wallichii*  *V. edulis* | Roots and rhizomes  Aerial parts | (Raal et al., 2008; Thusoo et al., 2014; Dyayiya et al., 2016; Jugran et al., 2019) |
|  | Curcuphenol | *V. jatamansi* | Rhizomes | Mathela et al. (2009) |
|  | Beyerene | *V. capensis* | Roots | Rawat et al. (2017) |
|  | Ipsdienol | *V. capensis* | Roots | Rawat et al. (2017) |
|  | 3',8,8'-Trimethoxy-3-piperidyl-2,2'-binaphthalene-1,1',4,4'-tetrone | *V. jatamansi* | Rhizomes | Pandian and Nagarajan, (2015) |
|  | *α*-Alaskene | *V. capensis* | Roots | Rawat et al. (2017) |
|  | n-Hexyl isovalerate | *V. officinalis* | Roots | Fokialakis et al. (2002) |
|  | Isomenthyl acetate | *V. officinalis* | Roots | Raal et al. (2008) |
|  | Valencene ketone | *V. officinalis* | Roots | Fokialakis et al. (2002) |
|  | (E)‐*β*‐Ocimene | *V. officinalis* | Aerial parts | Raina and Negi, (2015) |

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