**Supplementary data**

**Table S1 Classic prescriptions about *A. tsao-ko***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Prescription name** | **Treat** | **Prescription** | **Usage** | **Origin** |
| Caoguoyin-1 | Spleen cold  malaria | Seeds of *A. tsao-ko*  Peel of dried young or immature fruit of Citrus reticulata Blanco and its cultivars  *Ligusticum chuanxiong hort*  Mix equal parts of each of the above herbs | Decocted with water | Tai Ping Hui Min He Ji Ju Fang |
| Caoguoyin-2 | Dysentery | *A. tsao-ko*  *Glycyrrhiza uralensis*  *Sanguisorba officinalis*  *Citrus aurantium*  Mix equal parts of each of the above herbs | Decoction together with *Zingiber officinale* Rosc | Chuan Xin Shi Yong Fang |
| Caoguoyin-3 | Dispelling phlegm  Preventing attack of malaria | *A. tsao-ko*  *Dichroa febrifuga*  *Anemarrhena asphodeloides*  *Prunus mume* | Decocted with water | Ci You Xin Shu |
| Cao guo yin chen tang | Dispersing abdominal mass and resolving accumulation | *A. tsao-ko* of one mace  *Capillary Wormwood* of three maces  Dried rind of *Poria cocos sclerotia* of three maces  *Houpoea officinalis* of two maces  Dried peel of *Areca catechu* of two maces  *Polyporus umbellatus* of two maces  *Tangerine Peel* of one point five maces  *Alisma plantago-aquatica* one point five maces | Decocted with water | Wen Bing Tiao Bian |
| Guo fu tang | Qi deficiency  Miasmic malaria | Seeds of *A. tsao-ko* and *Aconitum carmichaeli* mixed in equal parts  Seven slices of *Zingiber officinale Roscoe*  A *Ziziphus jujuba* | Decocted with water | Yan Shi Ji Sheng Fang |
| Da yuan yin | Dampness turbidity  Depression  Covering and soaking  Pestilence  Miasmic malaria | Seeds of *A. tsao-ko*  *Glycyrrhiza uralensi* of five candareens  *Houpoea officinalis* of one mace  *Anemarrhena asphodeloides* of one mace  *Scutellaria baicalensis* of one mace  *Areca catechu* of two maces | Take the medicinal soup when it is lukewarm | Cheng Fang Bian Du |
| Suo pi yin | Latent heat in the interior  Consumptive thirst  Clear summer heat  Vomiting and dysentery | Seeds of *A. tsao-ko* of two taels  *Prunus mume* of three taels  *Glycyrrhiza uralensis* of two point five taels | Decocted with water | Fu Ren Da Quan Liang Fang |
| Cao guo wan | Spleen-stomach weakness  Deficiency-cold dysentery | *A. tsao-ko* of two maces  *Amomum villosum* of two maces  *Areca catechu* of two maces  Peel of dried young or immature fruit of *Citrus reticulata Blanco* and its cultivars of two maces  *Sparganium stoloni erum* of one mace  *Ipomoea cairica* of one mace | Mixed with flour to make pills | Pu Ji Fang |
| Shi pi san | Spleen-kidney yang deficiency  Deficiency-cold dysentery | Seeds of *A. tsao-ko*  *Houpoea officinalis*  *Atractylodes macrocephala*  *Aconitum carmichaeli*  *Poria cocos*  *Aucklandia lappa* | Decocted with water | Yan Shi Ji Sheng Fang |
| Shun tai san | Upward reversal of fetal qi | A *A. tsao-ko*  *Corydalis yanhusuo* of eight candareens  *Talcum* of eight candareens  *Trogopterus Dung* of one mace | Decocted with wine | Yan Fang Xin Bian |
| Yang wei tang | Spasm of limbs  Pregnancy  Malaria | *A. tsao-ko* with peel and membrane removed of zero point five taels  *Panax ginseng* five taels  *Agastache rugosa* of zero point five taels  *Houpoea officinalis* of one tael  *Atractylodes Lancea* of one tael  *Pinellia ternate* of one tael  Dried outer peel of *Citrus reticulata Blanco* and its cultivars of three candareen  *Glycyrrhiza uralensis* Fisch. of one candareen | Decocted with water | Yi Jian Fang |
| Ru xiang san | Leukorrhea with reddish discharge | A *A. tsao-ko* with the pericarp removed  A small piece of *Moschus* | Made into pills with flour and taken with Chenpi Yin | Yi Xue Gang Mu |

**Table S2 Attending functions of *A. tsao-ko* in ethnic minorities**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Nationality** | **Name** | **Medicinal part** | **Medicinal part** | **References** |
| Dai | Mahao | Fruit | Abdominal distension; Chest distress; Numbness of tongue in children | Dian Yao Lu |
| Hani | Caoguo | Fruit | Treatment malaria; Abdomen pain; Food accumulation;  Food accumulation | Ban Na Ha Ni Yao |
| Whole herb | Treat stomach problems | Peng Chaozhonget al*.,* 2010 |
| Lisu | Caoguo | Fruit | Stuffiness fluid retention; Stuffiness and fullness; Vomiting; Dysentery; Malaria; Food accumulation | Nu Jiang Zho Cao Yao |
| Menggu | Gagula | Fruit | Phlegm-fluid retention; Stuffiness and fullness; Vomiting; Diarrhea due to spleen deficiency; Spleen-stomach disharmony syndrome;  Food accumulation | Meng Yao  Zho Hua Ben Cao |
| Naxi | Caoguo | Fruit | Deficiency-cold of spleen and stomach; Vomiting; Malaria; Cold-phlegm syndrome; The stomach bilges and pain; Phlegm-fluid retention; Stuffiness and fullness; Dysentery; Food accumulation | Zho Guo Na Xi Don Ba Yi Yao Xue |
| Wa | Caoguo | Fruit | Vomiting; Phlegm-fluid retention; Malaria; Women are afraid of cold after childbirth | Zho Wa Yao |
| Zhuang | Keho | Fruit | Filthy-attack disease; Vomiting | Gui Yao Bian |
| Weiwuer | Chong qaqule | Fruit | Stomach cold; Reluctant to speech and eat; Dampness diarrhea; Loose stool; Insomnia; Neurasthenia; Amnesia | Zho Hua Ben Cao  Wei Wu Er Yao Zhi |
| Yi | Dehei | Fruit | Dizziness and headache; Weak body; Drunkenness hurts the stomach; A systemic disease caused by infection with syphilis; Rheumatic bone pain; Vomiting; Dysentery; Edema and dermal itching; Infantile malnutrition with accumulation in children; Bitten by a snake or insect | Yi Zhi Yao  Ai Lao  Dian Sheng Zhi |
| Zang | Gaguola | Fruit | Vomiting; Flatulence; Ringing in the intestines; Food accumulation; Diarrhea; Spleen diseases; Stomach disease; Stomach cold; Various allergic diseases caused by soil and water discomfort | Zang Biao  Zho Guo Zang Yao  Zang Ben Cao |

**Table S3 Chemical compounds in *A. tsao-ko***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **Componds** | **Chemical formula** | **Traits** | **References** |
| **Terpenoids** | |  |  |  |
| Monoterpenoids | |  |  |  |
| 1 | *p*-cymene | C10H14 | Colorless transparent flammable liquid | (Li et al*.,* 1975) |
| 2 | *α*-pinene | C10H16 | Colorless transparent liquid | (Liet al*.,* 1975) |
| 3 | *β*-pinene | C10H16 | Transparent colorless to slightly pale yellow liquid | (Li et al*.,* 1975) |
| 4 | myrcene | C10H16 |  | (Duñg et al*.,* 1992) |
| 5 | *α*-phellandrene | C10H16 |  | (Duñg et al*.,* 1992) |
| 6 | *α*-terpinene | C10H16 |  | (Duñg et al*.,* 1992) |
| 7 | *α*-thujene | C10H16 |  | (Yang et al*.,* 1994) |
| 8 | sabinene | C10H16 |  | (Yanget al*.,* 1994) |
| 9 | 3-carene | C10H16 | Clear colorless to slightly yellow liquid | (Li et al*.,* 1998) |
| 10 | *γ*-terpinene | C10H16 | Colorless to pale yellow liquid | (Li et al*.,* 1998) |
| 11 | camphene | C10H16 |  | (Li et al*.,* 1975) |
| 12 | terpinolene | C10H16 |  | (Yang et al*.,* 2008) |
| 13 | (+)-4-carene | C10H16 |  | (He et al*.,* 2013) |
| 14 | benzene,(1-ethylpropyl)- | C10H16 |  | (Yan and Lu et al*.,* 2014) |
| 15 | *β*-myrcene | C10H16 |  | (Lu et al*.,* 2013) |
| 16 | *o*-cymene | C10H14 | colorless liquid | (Feng et al*.,* 2010) |
| 17 | cyclofenchene | C10H16 |  | (Wang et al*.,* 2014) |
| 18 | [limonene](https://www.chemsrc.com/en/cas/138-86-3_509669.html) | C10H16 | Transparent to pale yellow liquid | (Li et al*.,* 1975) |
| 19 | [(+)-camphene](https://www.chemsrc.com/en/cas/79-92-5_663114.html" \t "_blank) | C10H16 | White waxy solid | (Yang et al*.,* 1994) |
| 20 | 2-bornene | C10H16 |  | (Li et al*.,* 1998) |
| 21 | cis-*β*-ocimene | C10H16 | Transparent liquid | (Li et al*.,* 1998) |
| 22 | Trans-*β*-ocimene | C10H16 |  | (Li et al*.,* 1998) |
| 23 | (+)-dipentene | C10H16 |  | (Fenget al*.,* 2010) |
| 24 | artemesia triene | C10H16 |  | (Zhanget al*.,* 2012) |
| 25 | ocimene | C10H16 |  | (Zhanget al*.,* 2012) |
| 26 | *β*-phellandrene | C10H16 |  | (Zhang et al*.,* 2012) |
| 27 | 1,3,8-*p*-menthatriene | C10H14 |  | (Qiuet al*.,* 2012) |
| 28 | cyclohexene,1-methyl-4-(1-methylethylidene)- | C10H16 |  | (Qiuet al*.,* 2012) |
| 29 | (-)-*p*-mentha-1,5-diene | C10H16 | Colorless to slightly yellow, non-fixed liquid | (Minet al*.,* 2014) |
| 30 | 2,4(8)-*p*-Menthadiene | C10H16 |  | (Wang et al*.,* 2014) |
| 31 | (3*S*,4*S*,6*R*)-3,6-dihydroxy-1-menthene | C10H18O2 | A colorless oil | (Honget al*.,* 2021b) |
| 32 | (1*R*,3*S*,4*R*)-3-hydroxyisopulegol | C10H18O2 | A pale yellowish oil | (Hong et al*.,* 2021b) |
| 33 | (1*R*,4*S*,6*S*)-1,6-dihydroxy-2-menthene | C10H13O2 | A pale yellowish oil | (Honget al*.,* 2021b) |
| 34 | 3,7-dimethyl-2-octene-1,8-diol | C10H20O2 | A colorless oil | (Hong et al*.,* 2021b) |
| Oxygenated monoterpenes | |  |  |  |
| 35 | (2*E*,6*E*)-8-hydroxy-2,6-dimeth-yl-2,6-octadienal | C10H16O2 |  | (Yang et al*.,* 2009a) |
| 36 | isoborneol | C10H18O | White crystal | (Liet al*.,* 1998) |
| 37 | (-)-myrtenal | C10H14O | Clear colorless to yellow | (Yanget al*.,* 1994) |
| 38 | A-phellandrene epoxide | C10H16O |  | (Wuet al*.,* 1997) |
| 39 | 5-caranol | C10H18O |  | (Ding and Xie et al*.,*2009) |
| 40 | linalool | C10H18O | Colorless liquid | (Li et al*.,* 1975) |
| 41 | *α*-terpineol | C10H18O |  | (Liet al*.,* 1975) |
| 42 | [geraniol](https://www.chemsrc.com/en/cas/106-24-1_125147.html) | C10H18O | Oily, colorless to pale yellow viscous liquid | (Li et al*.,* 1975) |
| 43 | geranial | C10H18O |  | (Liet al*.,* 1975) |
| 44 | [nerol](https://www.chemsrc.com/en/cas/106-25-2_175405.html) | C10H18O | Colorless oily liquid | (Li et al*.,* 1975) |
| 45 | neral | C10H16O |  | (Duñget al*.,* 1992) |
| 46 | (-)-myrtenol | C10H16O |  | (He et al*.,* 2013) |
| 47 | myrtana | C10H16O |  | (Heet al*.,* 2013) |
| 48 | 4-thujanol | C10H18O |  | (Zhu and Yu et al*.,* 2012) |
| 49 | 2,3-pinanediol | C10H18O2 |  | (Wan et al*.,* 2015) |
| 50 | tsaokoin | C10H14O2 | A pale brown oil | (Moonet al*.,* 2004) |
| 51 | isotsaokoin | C10H14O2 | A pale brown oil | (Moonet al*.,* 2004) |
| 52 | *Cis-p*-menth-2-en-1-ol | C10H18O |  | (Yanget al*.,* 2008) |
| 53 | *trans-p*-menth-2-en-1-ol | C10H18O |  | (Yang et al*.,* 2008) |
| 54 | *cis-p*-mentha-2,8-dien-1-ol | C10H16O |  | (Yang et al*.,* 2008) |
| 55 | isopulegol | C10H18O | Transparent liquid | (Yanget al*.,* 2008) |
| 56 | iso-isopulegol | C10H18O |  | (Yang et al*.,* 2008) |
| 57 | *cis*-chrysanthenol | C10H16O |  | (Yang et al*.,* 2008) |
| 58 | *δ*-terpineol | C10H18O |  | (Yang et al*.,* 2008) |
| 59 | terpinen-4-ol | C10H18O |  | (Yang et al*.,* 2008) |
| 60 | *cis*-piperitol | C10H18O |  | (Yang et al*.,* 2008) |
| 61 | *trans*-piperitol | C10H18O |  | (Yang et al*.,* 2008) |
| 62 | *trans*-carveol | C10H16O |  | (Yanget al*.,* 2008) |
| 63 | *trans*-(-)-pinocarveol | C10H16O |  | (Heet al*.,* 2013) |
| 64 | 8-oxogeraniol | C10H16O2 |  | (Leeet al*.,* 2008) |
| 65 | *p*-menth-1-ene-5,6-diol | C10H18O2 |  | (Leeet al*.,* 2008) |
| 66 | (2*E*,6*E*)-8-hydroxy-2,6-dimethyl-2,6-octadienal acetate | C12H18O3 |  | (Yang et al*.,* 2009a) |
| 67 | perillyl alcohol | C10H16O |  | (He et al*.,* 2013) |
| 68 | citronellol | C10H20O |  | (Feng et al*.,* 2010) |
| 69 | (*S*)-*cis*-Verbenol | C10H16O |  | (Feng et al*.,* 2010) |
| 70 | 1,8-cineole | C10H18O | Colorless transparent liquid | (Li et al*.,* 1975) |
| 71 | (*E*)-anethole | C10H12O |  | (Yang et al*.,* 2008) |
| 72 | 5-indanecarbaldehyde | C10H10O |  | (Sim et al*.,* 2019) |
| 73 | 4-indanecarbaldehyde | C10H10O |  | (Sim et al*.,* 2019) |
| 74 | trans-2,3,3a,7a-tetrahydro-1*H*-indene-4-carbaldehyde | C10H12O |  | (Starkenmann et al*.,* 2007) |
| 75 | trans-2,3,3a,7a-tetrahydro-1*H*-indene-5-carbaldehyde | C10H12O |  | (Starkenmann et al., 2007) |
| 76 | geranyl acetate | C12H20O2 | Colorless to pale yellow liquid | (Duñg et al*.,* 1992) |
| 77 | 3*α*-hydroxycarvotagenone | C10H16O |  | (Lee et al*.,* 2008) |
| 78 | 8-hydroxy-2,6-dimethyl-1,6-octadien-3-one | C10H16O2 |  | (Leeet al*.,* 2019a) |
| 79 | (2*E*,6*E*)-8-(acetyloxy)-2,6-dimethyl-2,6-octadien | C12H18O3 |  | (Leeet al*.,* 2019a) |
| 80 | (1*RS*,5*SR*,6*RS*)-5-hydroxybicyclo[4.3.0]non-2-ene-2carbaldehyde | C10H14O2 |  | (Yang et al*.,* 2009a) |
| 81 | pinocarveol | C10H16O |  | (Yang et al*.,* 1994) |
| 82 | linalool oxide (furan type) | C10H18O2 | Colorless transparent liquid | (Li et al*.,* 1998) |
| 83 | myrcenol | C10H18O |  | (Liet al*.,* 1998) |
| 84 | [fenchol](https://www.chemsrc.com/en/cas/1632-73-1_336211.html) | C10H18O | Colorless to pale yellow solid or liquid | (Zhao et al*.,* 2004) |
| 85 | *β*-terpineol | C10H18O |  | (Zhao et al*.,* 2004) |
| 86 | sabinol | C10H16O |  | (Zhao et al*.,* 2004) |
| 87 | camphene hydrate | C10H18O |  | (Zhaoet al*.,* 2004) |
| 88 | (*E*)-verbenol | C10H16O |  | (Zhaoet al*.,* 2004) |
| 89 | *p*-mentha-1,5-dien-8-ol | C10H16O |  | (Qiu et al*.,* 2012) |
| 90 | *p*-menth-1-en-8-ol | C10H18O | Colorless to pale yellow crystals | (Qiuet al*.,* 2012) |
| 91 | isopinocarveol | C10H16O |  | (Qiu et al*.,* 2012) |
| 92 | *α*-campholenaldehyde | C10H16O | Transparent to pale yellow liquid | (Yang et al*.,* 1994) |
| 93 | *α*-citral | C10H16O |  | (Zhao et al*.,* 2004) |
| 94 | citronellal | C10H18O |  | (Zhaoet al*.,* 2004) |
| 95 | geraniol acetate | C12H20O2 | Colorless to pale yellow liquid | (Zhaoet al*.,* 2004) |
| Sesquiterpenoids | |  |  |  |
| 96 | copaene | C15H24 |  | (Li et al*.,* 1998) |
| 97 | nerolidol | C15H26O | Colorless to straw yellow syrupy oily liquid | (Li et al*.,* 1975) |
| 98 | *γ*-muurolene | C15H24 |  | (Yanget al*.,* 2008) |
| 99 | germacrene D | C15H24 |  | (Yanget al*.,* 2008) |
| 100 | *α*-muurolene | C15H24 |  | (Yang et al*.,* 2008) |
| 101 | *δ*-cadinene | C15H24 |  | (Yang et al*.,* 2008) |
| 102 | caryophyllene | C15H24 | Colorless to light yellow oily liquid | (Fenget al*.,* 2010) |
| 103 | *β*-cubebene | C15H24 |  | (Zhanget al*.,* 2012) |
| 104 | *β*-elemene | C15H24 |  | (Zhang et al*.,* 2012) |
| 105 | *β*-cadinene | C15H24 |  | (Lu et al*.,* 2010) |
| 106 | (+)-valencene | C15H24 | Light yellow liquid | (Zhao et al*.,* 2004) |
| 107 | (+)-*δ*-cadinene | C15H24 |  | (Zhaoet al*.,* 2004) |
| 108 | patchoulene | C15H24 |  | (Zhaoet al*.,* 2004) |
| 109 | isoledene | C15H24 |  | (Zhao et al*.,* 2004) |
| 110 | (-)-alloaromadendrene | C15H24 | Oily liquid | (Zhaoet al*.,* 2004) |
| 111 | *β*-maaliene | C15H24 |  | (Zhang et al*.,* 2012) |
| 112 | eremophilene | C15H24 |  | (Zhang et al*.,* 2012) |
| 113 | *α*-selinene | C15H24 |  | (Zhang et al*.,* 2012) |
| 114 | cadine-1,4-diene | C15H24 |  | (Zhanget al*.,* 2012) |
| 115 | 2-isopropyl-5-methyl-9-methylene[4.4.0]dec-1-ene | C15H24 |  | (Zhang et al*.,* 2012) |
| 116 | *α*-farnesene | C15H24 |  | (Qiu et al*.,* 2012) |
| Oxygenated Sesquiterpenoids | |  |  |  |
| 117 | *trans*-nerolidol | C15H26O |  | (Honget al*.,* 2015) |
| 118 | 1-*epi*-Cubenol | C15H26O |  | (Yang et al*.,* 2008) |
| 119 | (*E*)-nerolidol | C15H26O |  | (Duñg et al*.,* 1992) |
| 120 | guaiol | C15H26O |  | (Yanget al*.,* 1994) |
| 121 | farnesol | C15H26O | Colorless oily liquid | (Liet al*.,* 1998) |
| 122 | *α*-eudesmol | C15H26O |  | (Zhaoet al*.,* 2004) |
| 123 | cubenol | C15H26O |  | (Yanget al*.,* 2008) |
| 124 | *β*-eudesmol | C15H26O |  | (Fenget al*.,* 2010) |
| 125 | hinesol | C15H26O |  | (Zhaoet al*.,* 2004) |
| 126 | *γ*-eudesmol | C15H26O |  | (Yanget al*.,* 2008) |
| 127 | nerolidol 2 | C15H26O |  | (Qiu et al*.,* 2012) |
| Diterpenoids | |  |  |  |
| 128 | (3*E*)-4-[(1*S*,4*aS*,8*aS*)-decahydro-5,5,8a-trimethyl-2methylene-1-naphthalenyl]-3-buten-2-one | C18H28O |  | (Lee et al*.,* 2019a) |
| 129 | amotsaokonal A | C20H30O |  | (Hong et al*.,* 2015) |
| 130 | amotsaokonal B | C20H32O |  | (Honget al*.*, 2015) |
| 131 | amotsaokonal C | C20H32O |  | (Honget al*.,* 2015) |
| **Aromatic compounds** | |  | |  |
| 132 | 2-isopropylbenzaldehyde | C10H12O |  | (Yanget al*.,* 2008) |
| 133 | 2-propenal,3-methyl-3-phenyl | C10H10O |  | (Yanget al*.,* 2008) |
| 134 | diethyl phthalate | C12H14O4 | Water white to colorless, odorless, oily liquid | (Wu et al*.,* 1997) |
| 135 | 4-propyl-benzaldehyde | C10H12O |  | (Yang et al*.,* 1994) |
| 136 | 3-phellandrene epoxide | C11H16 |  | (Wuet al*.,* 1997) |
| 137 | 1-ethyl-4-isopropylbenzene | C11H16 |  | (Wu et al*.,* 1997) |
| 138 | 1-methyl-3-propylbenzene | C10H14 |  | (Wuet al*.,* 1997) |
| 139 | benzene,1-ethyl-2,4-dimethyl- | C10H14 |  | (Qiuet al*.,* 2012) |
| 140 | cupanene | C15H22 | Colorless transparent liquid | (Meng et al*.,* 2013) |
| 141 | n-butylbenzene | C10H14 | Colorless liquid | (Wang et al*.,* 2014) |
| 142 | benzyl alcohol | C7H8O | Colorless liquid | (Yanget al*.,* 1994) |
| 143 | cuminol | C10H14O | Colorless to pale yellow transparent liquid | (Yang et al*.,* 1994) |
| 144 | 1-(4-methylphenyl) ethanol | C9H12O | Colorless liquid | (Wanget al*.,* 2014) |
| 145 | maltol | C6H6O3 | White crystal powder | (Qiuet al*.,* 2012) |
| 146 | myristicin | C11H12O3 |  | (Zhaoet al*.,* 2004) |
| 147 | 2-phenyl-2-butenal | C10H10O |  | (Duñget al*.,* 1992) |
| 148 | apiol | C12H14O4 |  | (Feng et al*.,* 2010) |
| 149 | 2,4,5-trimethylbenzaldehyde | C10H12O |  |  |
| 150 | benzenaldehyde | C7H6O | Colorless liquid | (Liet al*.,* 1998) |
| 151 | 4-propyl-benzaldehyde | C10H12O |  | (Li et al*.,* 1998) |
| 152 | benzenecarboxylic acid | C7H6O2 | White crystals or powder | (Qiu et al*.,* 2012) |
| 153 | 2,3-dihydro-1*H*-indene-4-carbaldehyde | C10H10O |  | (Simet al*.,* 2019) |
| 154 | 2,3,4-trimethylbenzaldehyde | C10H12O |  | (Meng et al*.,* 2013) |
| 155 | 2-*iso*-propylbenzaldehyde | C10H12O |  | (Meng et al*.,* 2013) |
| 156 | 2,3-dihydro-1*H*-indene-5-carbaldehyde | C10H10O |  | (Simet al*.,* 2019) |
| **Aliphatic compounds** | | | |  |
| 157 | 10-dodecyn-1-ol | C12H22O |  | (Zhaoet al*.,* 2004) |
| 158 | 2-octylcyclopropene-1-heptanol | C18H34O |  | (Zhaoet al*.,* 2004) |
| 159 | tsaokol A | C12H20O3 | Colorless oil | (Lee et al*.,* 2019a) |
| 160 | octan-1-ol | C8H18O | Colorless liquid | (Yanget al*.,* 1994) |
| 161 | nerolidol acetate | C17H28O2 |  | (Liet al*.,* 1998) |
| 162 | hexadecenoic acid | C16H30O2 | Transparent colorless liquid | (Zhaoet al*.,* 2004) |
| 163 | 9-octadecenoic acid | C18H34O2 |  | (Zhaoet al*.,* 2004) |
| 164 | n-Butyl methyl ether | C5H12O |  | (Yanget al*.,* 2008) |
| 165 | nonanal | C9H18O | Brown liquid | (Liet al*.,* 1975) |
| 166 | [decanal](https://www.chemsrc.com/en/cas/112-31-2_584838.html) | C10H20O | Transparent to pale yellow liquid | (Liet al*.,* 1975) |
| 167 | 2-dodecenal | C12H22O |  | (Duñg et al*.,* 1992) |
| 168 | hexanal | C6H12O | Colorless liquid | (Yang et al*.,* 1994) |
| 169 | heptanal | C7H14O | Transparent oily liquid | (Yanget al*.,* 1994) |
| 170 | octanal | C8H16O | Colorless liquid | (Yanget al*.,* 1994) |
| 171 | (*E*)-2-decenal | C10H18O | Transparent colorless to pale yellow liquid | (Li et al*.,* 1998) |
| 172 | (2*E*)-hexenal | C6H10O | Transparent colorless to pale yellow liquid | (Yang et al*.,* 2008) |
| 173 | (*E*)-2-octenal | C8H14O | Colorless to slightly yellow liquid | (Feng et al*.,* 2010) |
| 174 | 10-Undecenal | C11H20O | Transparent colorless liquid | (Qiuet al*.,* 2012) |
| 175 | *cis*-2,3,3a,7a-tetrahydro-1*H*-indene-4-carbaldehyde | C10H12O |  | (Sim et al*.,* 2019) |
| 176 | linalyl propanoat | C13H22O2 |  | (Liet al*.,* 1998) |
| 177 | octanol acetate | C10H20O2 | Colorless liquid | (Yanget al*.,* 2008) |
| 178 | (*2E*)-decenyl acetate | C14H26O2 |  | (Yang et al*.,* 2008) |
| 179 | 2-n-butylfuran | C8H12O | Colorless oily liquid | (Liet al*.,* 1998) |
| 180 | 2,3-dimethylheptane | C9H20 |  | (Yanget al*.,* 1994) |
| 181 | 2,2,7,7-tetramethyloctane | C12H26 |  | (Wang et al*.,* 2014) |
| 182 | 3,3-dimethylhexane | C8H18 | Colorless liquid | (Wang et al*.,* 2014) |
| 183 | 2,2-dimethylheptane | C9H20 |  | (Wang et al*.,* 2014) |
| 184 | 2,4,6-trimethyldecane | C13H28 |  | (Wang et al*.,* 2014) |
| 185 | undecane | C11H24 | Colorless liquid | (Wang et al*.,* 2014) |
| 186 | 2-methyloctane | C9H20 | Colorless liquid | (Wang et al*.,* 2014) |
| 187 | 2,3-dimethyldecane | C12H26 |  | (Wang et al*.,* 2014) |
| 188 | 5,7-dimethylundecane | C13H28 |  | (Wang et al*.,* 2014) |
| 189 | 4,7-dimethylundecane | C13H28 |  | (Wang et al*.,* 2014) |
| 190 | 3,5-dimethyloctane | C10H22 |  | (Wang et al*.,* 2014) |
| 191 | tetradecane | C14H30 | Colorless liquid | (Wang et al*.,* 2014) |
| 192 | 3-ethyl-3-methyldecane | C13H28 |  | (Wang et al*.,* 2014) |
| 193 | 2,3,6,7-tetramethyl-octane | C12H26 |  | (Wang et al*.,* 2014) |
| 194 | 5-methyl-5-propylnonane | C13H28 |  | (Wang et al*.,* 2014) |
| 195 | 3-ethyl-3-methylheptane | C10H22 |  | (Wang et al*.,* 2014) |
| 196 | farnesane | C15H32 |  | (Wang et al*.,* 2014) |
| 197 | nonylcyclopentane | C14H28 |  | (Wang et al*.,* 2014) |
| 198 | hexadecane | C16H34 | Colorless liquid | (Wang et al*.,* 2014) |
| 199 | 1,10-undecadiene | C11H20 |  | (Wang et al*.,* 2014) |
| 200 | palmitic acid | C17H34O2 | White crystals or powder | (Wu et al*.,* 1997) |
| 201 | arachidic acid | C20H40O2 | White glossy leaf-like crystals | (Wu et al*.,* 1997) |
| 202 | nonanoic acid | C9H18O2 | Transparent oily liquid | (Li et al*.,* 1998) |
| 203 | acetaldehyde octanoate | C10H20O3 |  | (Zhao et al*.,* 2004) |
| 204 | 4-methyl-octanoic acid | C9H18O2 |  | (Zhao et al*.,* 2004) |
| 205 | myristic acid | C14H28O2 | White solid | (Zhao et al*.,* 2004) |
| 206 | 2-methyl-3,4-dibromo-pentanoic acid | C6H10Br2O2 |  | (Zhaoet al*.,* 2004) |
| 207 | 6,7-dihydroxy-3,7-dimethyloct-2-enoic acid | C10H18O4 |  | (Leeet al*.,* 2008) |
| 208 | 1-nonanol | C9H20O | Colorless to pale yellow liquid | (Qiu et al*.,* 2012) |
| 209 | (11*R*)-hydroxyhexadeca-(2*E*,7*Z*,9*E*)-trienoic acid | C16H26O3 | An amorphous gum | (Lee et al*.,* 2019a) |
| 210 | *trans*-2-undecenal | C11H22O |  | (Li et al*.,* 1998) |
| 211 | isooctyl vinyl ether | C10H20O |  | (Wang et al*.,* 2014) |
| 212 | *α*-bisabilene epoxide | C15H24O |  | (Zhao et al*.,* 2004) |
| 213 | hexyl pentyl ether | C14H30O |  | (Wang et al*.,* 2014) |
| 214 | acetoxytsaokol A | C14H22O4 | Colorless oil | (Leeet al*.,* 2019a) |
| 215 | (2*E*)-1-acetate 2-dodecen-1-ol | C15H28O |  | (Lee et al*.,* 2019a) |
| 216 | *trans*-2-undecen-1-al | C11H20O |  | (Yang et al*.,* 1994) |
| 217 | *trans*-2-dodecenal | C12H22O |  | (Yang et al*.,* 1994) |
| 218 | 2-butenal | C4H6O | Colorless liquid | (Liet al*.,* 1998) |
| 219 | *trans*-2-tridecenal | C13H24O |  | (Li et al*.,* 1998) |
| 220 | 2-methylpentanal | C6H12O | Colorless liquid | (Li et al*.,* 1998) |
| 221 | 2-heptenal | C7H12O |  | (Li et al*.,* 1998) |
| 222 | hexadecanal | C16H32O |  | (Li et al*.,* 1998) |
| 223 | pentanal | C5H10O | Colorless liquid | (Zhaoet al*.,* 2004) |
| 224 | *β*-octyl acrolein | C12H22O |  | (Zhao et al*.,* 2004) |
| 225 | *cis*-4-decenal | C10H18O | Colorless to slightly yellow liquid | (Feng et al*.,* 2010) |
| 226 | 3-heptylacrolein | C10H18O | Transparent colorless to pale yellow liquid | (Fenget al*.,* 2010) |
| 227 | *cis,cis,cis*-7,10,13-hexadecatrienal | C16H26O |  | (Qiu et al*.,* 2012) |
| 228 | 2-hexenal | C6H10O | Colorless oily liquid | (Zhang et al*.,* 2012) |
| 229 | (*E*)-2-dodecen-1-al | C12H22O |  | (Lu et al*.,* 2013) |
| 230 | 2,4-decadienal | C10H16O |  | (Qiuet al*.,* 2012) |
| 231 | dodecanal | C12H24O | Transparent to pale yellow liquid | (Liu et al*.,* 2021b) |
| 232 | (*E*)-2-decenyl acetate | C12H22O2 |  | (Meng et al*.,* 2013) |
| 233 | [(*E*)-2-dodecen-1-yl acetate](https://www.chemsrc.com/en/cas/38363-23-4_895167.html) | C14H26O2 |  | (Yanget al*.,* 1994) |
| 234 | linalyl acetate | C12H20O2 | Colorless to pale yellow liquid | (Fenget al*.,* 2010) |
| 235 | 5-dodecanol acetate | C14H28O2 |  | (Qiuet al*.,* 2012) |
| 236 | 1,1-dimethylpropyl ester pentanoic acid | C8H16O2 |  | (Wang et al*.,* 2014) |
| 237 | methyl linolenate | C19H32O2 |  | (Hong et al*.,* 2015) |
| 238 | (2*E*)-dodecenyl acetate | C14H26O2 |  | (Hong et al*.,* 2015) |
| 239 | fungacetin | C9H14O6 | Colorless liquid | (Zhaoet al*.,* 2004) |
| 240 | threose triacetate | C10H14O7 |  | (Zhao et al*.,* 2004) |
| 241 | nerolidyl acetate | C17H28O2 |  | (Zhaoet al*.,* 2004) |
| 242 | 7-octenyl acetate | C10H18O2 |  | (Wuet al*.,* 1997) |
| 243 | 1,13-tridecanediol diacetate | C17H32O4 |  | (Wu et al*.,* 1997) |
| 244 | isobutyl hydrogen phthalate | C12H14O4 |  | (Wu et al*.,* 1997) |
| 245 | eicosatrienoic acid methylester | C21H36O2 |  | (Li et al*.,* 1998) |
| 246 | nerol acetate | C13H22O2 | Colorless liquid | (Li et al*.,* 1998) |
| 247 | ethyl octanoate | C10H20O2 | Colorless to pale yellow liquid | (Zhaoet al*.,* 2004) |
| 248 | neryl acetate | C12H20O2 | Colorless to slightly yellow transparent liquid | (Duñg et al*.,* 1992) |
| **Ketones** | | | |  |
| 249 | 2-hydroxy-2,6-dimethyl-hept-6-en-3-one | C9H16O2 |  | (Qiu et al*.,* 2012) |
| 250 | 4-(4-hydroxyphenyl)-2-butanone | C10H12O2 | White powder | (Qiu et al*.,* 2012) |
| 251 | camphor | C10H16O | Colorless or white crystalline powder | (Li et al*.,* 1975) |
| 252 | 2-cyclopenten-1-one | C5H6O |  | (Li et al*.,* 1998) |
| 253 | 6-methylhept-5-en-2-one | C8H14O | Transparent, light yellow liquid | (Zhaoet al*.,* 2004) |
| 254 | [2-nonanone](https://www.chemsrc.com/en/cas/821-55-6_1085285.html) | C9H18O | Colorless to pale yellow transparent liquid | (Zhao et al*.,* 2004) |
| 255 | 4-isobutylacetophenone | C12H16O | Transparent colorless oily liquid | (Zhao et al*.,* 2004) |
| 256 | pippenitone oxide | C10H16O2 |  | (Zhaoet al*.,* 2004) |
| 257 | dihydrojasmone | C11H18O |  | (Qiuet al*.,* 2012) |
| 258 | 5,7-dihydroxychromone | C9H6O4 |  | (Zhang et al*.,* 2021) |
| 259 | sec-*O*-glucosylhamaudol | C21H26O10 |  | (Zhang et al*.,* 2021) |
| 260 | polygalaxanthone III | C25H28O15 |  | (Zhang et al*.,* 2021) |
| 261 | 2-cyclopenten-1-one,2-(2-butenyl)-4-hydroxy-3-methyl-,(*Z*)- | C10H14O2 |  | (Qiuet al*.,* 2012) |
| 262 | 4-dihydro-2-(4′-hydroxy-phenylmethyl)-6-[(3″,4″-dihydroxy-5″-methoxyphenyl)methylene]-pyran-3,5-dione | C20H18O7 |  | (Zhang et al*.,* 2015a) |
| 263 | 1,7-bis(4-hydroxy-3-methoxyphenyl)-4,6-hepta-dien-3-one | C21H22O5 |  | (Lee et al*.,* 2008) |
| 264 | 2-acetyl cyclopentanone | C7H10O2 |  | (Qiu et al*.,* 2012) |
| **Phenolic** | | | |  |
| 265 | protocatechuic acid | C7H6O4 | White to pale yellow crystalline powder | (Martin et al*.,* 2000a) |
| 266 | gentisic | C7H6O4 |  | (Li et al*.,* 2017b) |
| 267 | vanillic acid | C8H8O4 | White odorless crystals or powder | (Martinet al*.,* 2000a) |
| 268 | o-cresol | C7H8O | Clear to slightly amber liquid | (Yang et al*.,* 2008) |
| 269 | 3-hydroxybenzoic acid | C7H6O3 |  | (Jin et al*.,*2013) |
| 270 | 2-methoxy-resorcinol | C7H6O4 |  | (Jinet al*.,* 2013) |
| 271 | meta-cresol | C7H8O | Clear to slightly amber liquid | (Yang et al*.,* 2008) |
| 272 | hydroquinone | C6H6O2 | Off-white powder or white needle crystal | (Yanget al*.,* 2008) |
| 273 | catechol | C6H6O2 | Light gray to light brown flakes | (Zhang and Lu et al*.,*2014a) |
| 274 | (+)-epicatechin | C15H14O6 | White powder | (Martin et al*.,* 2000a) |
| 275 | (-)-catechin | C15H14O6 | Solid powder | (Martin et al*.,* 2000a) |
| 276 | 4-indancarbaldehyde | C10H10O |  | (Jin et al*.,* 2013) |
| 277 | 5-indancarbaldehyde | C10H10O |  | (Jin et al*.,* 2013) |
| 278 | pyrogallic acid | C6H6O3 |  | (Wang and Yang et al*.,*2009b) |
| 279 | 3-methoxy-catechol | C7H8O3 |  | (Jin et al*.,* 2013) |
| 280 | 4-methoxy-catechol | C7H8O3 |  | (Jin et al*.,* 2013) |
| 281 | procyanidin B2 | C30H26O12 |  | (Jin et al*.,* 2013) |
| 282 | 2,6-dimethoxyphenol | C8H10O3 | Grey to light brown solid | (Zhaoet al*.,* 2004) |
| 283 | ρ-ethylguaiacol | C9H12O2 |  | (Yang et al*.,* 2008) |
| 284 | eugenol | C10H12O2 | Colorless to pale yellow liquid with a strong clove odor | (Yang et al*.,* 2008) |
| 285 | salicyl alcohol | C7H8O2 |  | (Qiu et al*.,* 2012) |
| 286 | vanillin | C8H8O3 | White or very slightly yellow needles | (Qiu et al*.,* 2012) |
| 287 | 4-hydroxybenzaldehyde | C7H6O2 |  | (Yang et al*.,* 2009a) |
| 288 | 4-methoxy-3-hydroxy-benzaldehyde | C8H8O3 |  | (Yang et al*.,* 2009a) |
| 289 | thymol | C10H14O | Colorless crystal or colorless crystalline powder | (Qiu et al*.,* 2012) |
| 290 | phenol,3,5-diethyl- | C10H14O |  | (Qiu et al*.,* 2012) |
| 291 | phenol,2,6-dimethoxy- | C8H10O3 | Grey to light brown solid | (Qiu et al*.,* 2012) |
| 292 | 1,2-benzenediol,4-methyl- | C7H8O2 |  | (Qiu et al*.,* 2012) |
| 293 | resorcinol | C6H6O2 | White needle crystal |  |
| 294 | phenol,2-propyl- | C9H12O | Colorless to light brown powder | (Qiu et al*.,* 2012) |
| 295 | benzaldehyde,3-hydroxy- | C7H6O2 |  | (Qiuet al*.,* 2012) |
| 296 | 1,3,5-benzenetriol | C6H6O3 | White to pale yellow crystals | (Qiu et al*.,* 2012) |
| 297 | phenol,4-ethyl- | C8H10O | Off-white solid | (Qiu et al*.,* 2012) |
| 298 | 3-(*p*-Hydroxyphenyl)-1-propanol | C9H12O2 |  | (Qiu et al*.,* 2012) |
| 299 | 4-n-heptylphenol | C13H20O | Transparent brown liquid | (Qiuet al*.,* 2012) |
| 300 | vitamin E | C29H50O2 | Yellowish green, transparent viscous liquid | (Qiu et al*.,* 2012) |
| 301 | 2,6-dimethoxy-4-[(1*R*)-1-methoxyethyl]-phenol | C11H16O4 | An amorphous gum | (Lee et al*.,* 2019a) |
| 302 | 2,6-dimethoxy-4-[(1*R*)-1-methoxypropyl]-phenol | C12H18O4 | An amorphous gum | (Lee et al*.,* 2019a) |
| 303 | 2,6-dimethoxy-4-methyl-phenol | C9H12O3 |  | (Lee et al*.,* 2019a) |
| 304 | 2,6-dimethoxy-4-(methoxymethyl)-phenol | C10H14O4 |  | (Lee et al*.,* 2019a) |
| 305 | 2,6-dimethoxy-4-(2-propen-1-yl)-phenol | C11H16O3 |  | (Leeet al*.,* 2019a) |
| 306 | 1-(4-hydroxy-3,5-dimethoxyphenyl)-1-propanone | C11H14O4 |  | (Lee et al*.,* 2019a) |
| 307 | 3,3′,5,5′-tetramethoxy-[1,10-biphenyl]-4,4′-diol | C16H18O6 |  | (Lee et al*.,* 2019a) |
| 308 | 4-hydroxy-3-methoxy-benzaldehyde | C8H8O2 |  | (Lee et al*.,* 2019a) |
| 309 | 1-(4-hydroxy-3-methoxyphenyl)-ethanone | C9H10O2 |  | (Lee et al*.,* 2019a) |
| 310 | 1-(4-hydroxy-3-methoxyphenyl)-1-propanone | C11H14O2 |  | (Lee et al*.,* 2019a) |
| 311 | phloroacetophenone 2′-*O*-glucoside | C14H18O9 |  | (Hong et al*.,* 2021b) |
| 312 | (-)-*epi*-afzelechin | C15H14O5 |  | (He et al*.,* 2021b) |
| 313 | (+)-afzelechin | C15H14O5 |  | (Heet al*.,* 2021b) |
| 314 | *epi*-catechin | C15H14O6 |  | (He et al*.,* 2021b) |
| 315 | catechin | C15H14O6 |  | (He et al*.,* 2021b) |
| 316 | 8-aldehyde-catechin | C16H14O7 |  | (He et al*.,* 2021b) |
| 317 | flavanocoumarin | C18H14O7 |  | (He et al*.,* 2021b) |
| 318 | epi-catechin-(4*β*→8,2*β*→*O*→7)-epi-afzelechin | C31H26O10 |  | (He et al*.,* 2021b) |
| 319 | proanthocyanidin A-2 | C31H26O11 |  | (He et al*.,* 2021b) |
| 320 | sappanone B | C16H14O5 | Yellow needles | (Heet al*.,* 2021b) |
| 321 | brazilin | C16H14O5 |  | (He et al*.,* 2021b) |
| 322 | protocatechualdehyde | C7H6O3 | Brown powder | (Martin et al*.,* 2000a) |
| 323 | 4-hydroxybenzoic acid | C7H6O3 | White to beige crystalline powder | (Qiuet al*.,* 2012) |
| 324 | 3-hydroxy-4-methoxybenzoic acid | C8H8O4 |  | (Qiu et al*.,* 2012) |
| 325 | carvacrol | C10H14O | Colorless or pale yellow liquid | (Zhao et al*.,* 2004) |
| **Contains the chemical components of C6-C3-C6** | | | |  |
| Flavone glycosides | | | |  |
| 326 | quercetin-7-*O*-*β*-glucoside | C21H20O12 |  | (Zhang et al*.,* 2014a) |
| 327 | quercetin 3-*O*-sophoroside-7-*O*-rhamn oside | C33H40O21 |  | (Zhang et al*.,* 2021) |
| Flavonoids | | | |  |
| 328 | procyanidin B1 | C30H26O12 | Brown crystal | (Zhang et al*.,* 2021) |
| 329 | nobiletin | C21H22O8 |  | (Zhang et al*.,* 2021) |
| 330 | 6''-*O*-acetylgenistin | C23H22O11 | White or light white crystal or crystalline powder | (Zhang et al*.,* 2021) |
| 331 | barbaloin | C21H22O9 | Yellow powder | (Zhang et al*.,* 2021) |
| 332 | 6-hydroxykaempferol 3-*β*-rutinoside | C27H30O16 |  | (Zhanget al*.,* 2021) |
| 333 | cyclomorusin | C25H22O6 |  | (Zhang et al*.,* 2021) |
| 334 | mulberrin | C25H26O6 |  | (Zhang et al*.,* 2021) |
| 335 | isoschaftoside | C26H28O14 |  | (Zhanget al*.,* 2021) |
| Flavonols | | | |  |
| 336 | rutin | C27H30O16 | Off-white-yellow crystalline solid | (Shim et al*.,* 2021b) |
| 337 | quercetin | C21H20O11 | Yellow solid | (Shim et al*.,* 2021b) |
| 338 | morin | C15H10O7 | Yellow to brown powder | (Zhang et al*.,* 2021) |
| 339 | dihydromyricetin | C15H12O8 | White to beige | (Zhanget al*.,* 2021) |
| 340 | reynoutrin | C20H18O11 |  | (Zhanget al*.,* 2021) |
| 341 | kaempferol | C15H10O6 |  | (Zhang et al*.,* 2021) |
| 342 | isorhamnetin | C16H12O7 |  | (Zhang et al*.,* 2021) |
| 343 | isoastilbin | C21H22O11 |  | (Zhang et al*.,* 2021) |
| 344 | isoquercitrin | C21H20O12 |  | (Shimet al*.,* 2021b) |
| 345 | (+)-catechin | C15H14O6 |  | (Zhanget al*.,* 2021) |
| 346 | epigallocatechin 3-gallate | C22H18O11 |  | (Zhanget al*.,* 2021) |
| 347 | (-)-epicatechin | C15H14O6 |  | (Zhang et al*.,* 2021) |
| Flavanone | | | |  |
| 348 | bavachin | C20H20O4 |  | (Zhang et al*.,* 2021) |
| 349 | tsaokonol A | C26H28O5 | A yellowish oil | (Kim et al*.,* 2019c) |
| 350 | tsaokonol B | C26H28O5 | A yellowish oil | (Kimet al*.,* 2019c) |
| 351 | tsaokonol C | C26H28O4 | A yellowish oil | (Kimet al*.,* 2019c) |
| 352 | tsaokonol D | C26H28O4 | A yellowish oil | (Kim et al*.,* 2019c) |
| 353 | tsaokonol E | C31H36O5 | Yellowish oils | (Kimet al*.,* 2019c) |
| 354 | tsaokonol F | C31H36O5 | Yellowish oils | (Kim et al*.,* 2019c) |
| 355 | tsaokonol G | C31H36O4 | Yellowish oils | (Kimet al*.,* 2019c) |
| 356 | tsaokonol H | C31H36O4 | Yellowish oils | (Kimet al*.,* 2019c) |
| 357 | liquiritigenin | C15H12O4 |  | (Zhang et al*.,* 2021) |
| 358 | taxifolin | C15H12O7 |  | (Zhang et al*.,* 2021) |
| 359 | alpinetin | C16H14O4 | Colorless needles | (Kim et al*.,* 2019b) |
| 360 | naringenin-5-*O*-methyl ether | C16H14O5 | Colorless oil | (Kimet al*.,* 2019b) |
| 361 | naringenin | C15H12O5 | Colorless gum | (Kim et al*.,* 2019b) |
| 362 | hesperetin | C16H14O6 | Colorless gum | (Kim et al*.,* 2019b) |
| Chalcone | | | |  |
| 363 | tsaokonol I | C31H36O5 | A brown oil | (Kimet al*.,* 2019c) |
| 364 | tsaokonol J | C31H36O4 | A brown oil | (Kim et al*.,* 2019c) |
| 365 | 4′-hydroxy-4-methoxychalcone | C16H14O3 |  | (Jin et al*.,* 2013) |
| 366 | 4,4′-dimethoxychalcone | C17H16O3 |  | (Jin et al*.,* 2013) |
| 367 | 2′,4′-dihydroxy-4-methoxy-chalcone | C16H14O4 |  | (Jin et al*.,* 2013) |
| 368 | 4′-hydroxy-2′-methoxychalcone | C16H14O3 |  | (Jin et al*.,* 2013) |
| 369 | 2′,4,4′-trimethoxychalcone | C18H18O4 |  | (Jin et al*.,* 2013) |
| 370 | 4-hydroxy-2′-methoxychalcone | C16H14O3 |  | (Jin et al*.,* 2013) |
| 371 | 4-hydroxy-4′-methoxychalcone | C16H14O3 |  | (Jin et al*.,* 2013) |
| 372 | neohesperidin dihydrochalcone | C28H36O15 |  | (Zhanget al*.,* 2021) |
| Chalcone derivatives | | | |  |
| 373 | 2',4',6'-trihydroxy-4-methoxy chalcone | C16H14O6 | Colorless gum | (Kim et al*.,* 2019b) |
| 374 | boesenbergin B | C26H28O4 | Pale yellow amorphous solid | (Kim et al*.,* 2019b) |
| 375 | 4-hydroxyboesenbergin B | C26H28O5 | Yellowish oil | (Kimet al*.,* 2019b) |
| **Diarylheptanoids** | | | |  |
| 376 | 2,3-dihydro-2-(4′-hydroxy-phenylethyl)-6-[(3″,4″-dihydroxy-5″-methoxy)phenyl]-4-pyrone | C21H22O5 | A yellowish powder | (Zhang et al*.,* 2015a) |
| 377 | (+)-hannokinol | C19H24O4 |  | (Martin et al*.,* 2000a) |
| 378 | 6-(4-Hydroxyphenyl)-4-hydroxyhexan-2-one | C12H16O3 | Colorless oil | (Moon and Choet al*.,* 2005a) |
| 379 | amomutsaokol A | C31H34O11 | Yellowish powder | (He et al*.,* 2020) |
| 380 | amomutsaokol B | C29H32O6 | White powder | (Heet al*.,* 2020) |
| 381 | amomutsaokol C | C20H22O6 | Yellow powder | (He et al*.,* 2020) |
| 382 | amomutsaokol D | C20H18O6 | Yellow powder | (Heet al*.,* 2020) |
| 383 | amomutsaokol E | C20H20O6 | Yellow powder | (Heet al*.,* 2020) |
| 384 | amomutsaokol F | C22H26O8 | Yellowish powder | (Heet al*.,* 2020) |
| 385 | amomutsaokol G | C19H22O4 | Yellow viscous liquid | (Heet al*.,* 2020) |
| 386 | amomutsaokol H | C20H24O5 | Yellow viscous liquid | (Heet al*.,* 2020) |
| 387 | amomutsaokol I | C22H26O5 | Yellow viscous liquid | (Heet al*.,* 2020) |
| 388 | amomutsaokol J | C20H20O4 | Yellow powder | (Heet al*.,* 2020) |
| 389 | amomutsaokol K | C20H24O5 | Colorless oil | (He et al*.,* 2020) |
| 390 | (3*R*,5*R*)-3,5-dihydroxy-1,7-bis(4-hydro-xyphenyl)heptane | C19H24O4 |  | (Heet al*.,* 2020) |
| 391 | (3*R*,5*R*)-3-acetoxy-5-hydroxy-1,7-bis(4-hydroxyphenyl)heptane | C21H26O5 |  | (He et al*.,* 2020) |
| 392 | (3*R*,5*R)*-3,5-dihydroxy-1-(3,4-dihydroxyphenyl)-7-(4-hydroxyphenyl)heptane | C19H24O5 |  | (He et al*.,* 2020) |
| 393 | (3*R*,5*R*)-3,5-dihydroxy-1-(4-hydroxy-3-methoxyphenyl)-7-(4-hydroxyphenyl)heptane | C20H26O4 |  | (He et al*.,* 2020) |
| 394 | *rel*-(3*R*,5*S*)-3,5-dihydroxy-1-(3,4-dihydroxyphenyl)-7-(4-hydroxyphenyl)heptane | C19H24O5 |  | (He et al*.,* 2020) |
| 395 | (3*R*,5*S*)-3,5-dihydroxy-1-(4-hydroxy-3-methox-yphenyl)-7-(4-hydroxy phenyl)heptane | C20H26O5 |  | (He et al*.,* 2020) |
| 396 | *rel*-(3*R*,5*S*)-3,5-dihydroxy-1-(4-hydroxy-3-methoxy phenyl)-7-(3,4-dihy-droxyphenyl)heptane | C20H26O6 |  | (He et al*.,* 2020) |
| 397 | 4-[(3*S*,5*E*)-3-hy-droxy-7-(4-hydroxyphenyl)hept-5-en-1-yl]-2-methoxyphenol | C20H24O4 |  | (He et al*.,* 2020) |
| 398 | tsaokopyranol A | C28H32O9 | Colorless caramelized solid | (He et al*.,* 2020a) |
| 399 | tsaokopyranol B | C29H34O10 | Colorless caramelized solid | (Heet al*.,* 2020a) |
| 400 | tsaokopyranol C | C21H26O8 | Yellowish caramelized solid | (He et al*.,* 2020a) |
| 401 | tsaokopyranol D | C22H28O9 | Yellowish caramelized solid | (Heet al*.,* 2020a) |
| 402 | tsaokopyranol E | C20H24O6 | Yellowish caramelized solid | (He et al*.,* 2020a) |
| 403 | tsaokopyranol F | C20H24O6 | Yellowish caramelized solid | (He et al*.,* 2020a) |
| 404 | tsaokopyranol G | C21H26O8 | Yellowish caramelized solid | (Heet al*.,* 2020a) |
| 405 | tsaokopyranol H | C20H24O5 | Yellowish powder | (He et al*.,* 2020a) |
| 406 | tsaokopyranol I | C20H24O6 | Yellowish powder | (Heet al*.,* 2020a) |
| 407 | tsaokopyranol J | C21H24O7 | Yellowish powder | (He et al*.,* 2020a) |
| 408 | tsaokopyranol K | C20H24O6 | Yellowish powder | (He et al*.,* 2020a) |
| 409 | tsaokopyranol L | C20H22O4 | Yellow powder | (Heet al*.,* 2020a) |
| 410 | tsaokopyranol M | C20H22O4 | Yellow powder | (Heet al*.,* 2020) |
| 411 | (2*R*,6*S*)-3,4-dehydro-1,7-bis(4-hydroxyphenyl)-4′-de-*O*-methyl centrolobine | C19H20O3 |  | (He et al*.,* 2020a) |
| 412 | (2*R*,6*R*)-3,4-dehydro-4′-de-*O*-methyl centrolobin | C19H20O3 |  | (He et al*.,* 2020a) |
| 413 | phaeoheptanoxide | C19H22O5 |  | (He et al*.,* 2020a) |
| 414 | engelheptanoxides C | C20H24O5 |  | (Heet al*.,* 2020a) |
| 415 | (4*E*,6*E*)-1,7-bis(4-hydroxyphenyl)hepta-4,6-dien-3-one | C19H18O3 |  | (Heet al*.,* 2020) |
| 416 | (4*E*,6*E*)-1,7-bis(4-hydroxy-3-methoxyphenyl)hepta-4,6-dien-3-one | C21H22O5 |  | (Heet al*.,* 2020) |
| 417 | 1,7-bis(4-hydroxyphenyl)-4(*E*)-hepten-3-one | C19H20O3 |  | (Jin et al*.,* 2013) |
| 418 | 2,3-dihydro-2-(4′-hydroxy-phenylethyl)-6-[(3′′,4′′-dihydroxy-5′′-methoxy)phenyl]-4-pyrone | C20H20O6 |  | (Jinet al*.,* 2013) |
| 419 | 4-dihydro-2-(4′-hydroxy-phenylmethyl)-6-[(3′′,4′′-dihydroxy-5′′-methoxyphenyl)-methylene]-pyran-3,5-dione | C20H18O7 |  | (Jin et al*.,* 2013) |
| 420 | tsaokoarylone[7-(4-hydroxy-3-methoxyphenyl)-1-(4-hydroxyphenyl)-hepta-4*E*,6*E*-dien-3-one] | C20H20O4 | Yellow powder | (Moon et al*.,* 2005a) |
| 421 | 1,7-bis(4-hydroxyphenyl)hepta-4*E*,6*E*-dien-3-one | C19H18O3 |  | (Moon et al*.,* 2005a) |
| 422 | meso-hannokinol | C19H24O4 |  | (Martin et al*.,* 2000a) |
| 423 | CG-A | C21H22O5 |  | (Zhanget al*.,* 2016a) |
| 424 | CG-B | C20 H18O7 |  | (Zhang et al*.,* 2016a) |
| 425 | 1,7-bis(4-hydroxyphenyl)-3-hepten-5-one | C19H20O3 |  | (He et al*.,* 2020) |
| 426 | tsaokoarylone | C20H20O4 | Colorless oil | (Kimet al*.,* 2019b) |
| **Bicyclic nonane** | | | |  |
| 427 | 6,7-dihydroxy-indan-4-carbaldehyde | C10H10O3 |  | (Leeet al*.,* 2008) |
| 428 | 6-hydroxyindan-4-carbaldehyde | C10H10O2 |  | (Lee et al*.,* 2008) |
| **Steroids** | | | |  |
| 429 | sitosterol | C29H50O | A white needle-like crystal | (Zhanget al*.,* 2014a) |
| 430 | daucosterol | C35H60O6 | A white amorphous powder | (Zhanget al*.,* 2014a) |
| 431 | ergost-5-en-3-ol,(3.beta.)- | C28H48O |  | (Qiuet al*.,* 2012) |
| 432 | stigmasterol | C29H50O |  | (Qiu et al*.,* 2012) |
| 433 | *γ*-sitosterol | C29H50O | White solid | (Qiu et al*.,* 2012) |
| **Flavanol-fatty alcohol hybrids** | | | |  |
| 434 | tsaokoflavanol A | C23H28O7 | White powder | (He et al*.,* 2020) |
| 435 | tsaokoflavanol B | C25H32O7 |  | (He et al*.,* 2020) |
| 436 | tsaokoflavanol C | C25H30O8 |  | (Heet al*.,* 2020) |
| 437 | tsaokoflavanol D | C25H30O8 |  | (Heet al*.,* 2020) |
| 438 | tsaokoflavanol E | C27H32O9 |  | (He et al*.,* 2020) |
| 439 | tsaokoflavanol F | C27H36O7 |  | (Heet al*.,* 2020) |
| 440 | tsaokoflavanol G | C23H28O7 |  | (Heet al*.,* 2020) |
| 441 | tsaokoflavanol H | C23H28O7 |  | (Heet al*.,* 2020) |
| 442 | tsaokoflavanol I | C23H28O7 |  | (He et al*.,* 2020) |
| 443 | tsaokoflavanol J | C25H32O7 |  | (Heet al*.,* 2020) |
| 444 | tsaokoflavanol K | C25H32O7 |  | (He et al*.,* 2020) |
| 445 | tsaokoflavanol L | C25H32O7 |  | (Heet al*.,* 2020) |
| 446 | tsaokoflavanol M | C25H32O7 |  | (He et al*.,* 2020) |
| 447 | tsaokoflavanol N | C25H30O8 |  | (He et al*.,* 2020) |
| 448 | tsaokoflavanol O | C25H30O8 |  | (Heet al*.,* 2020) |
| 449 | tsaokoflavanol P | C27H32O9 |  | (Heet al*.,* 2020) |
| 450 | tsaokoflavanol Q | C27H32O9 |  | (Heet al*.,* 2020) |
| 451 | tsaokoflavanol R | C27H36O7 |  | (He et al*.,* 2020) |
| 452 | tsaokoflavanol S | C27H36O7 |  | (He et al*.*, 2020) |
| **Flavanol-menthane conjugates** | | | |  |
| 453 | amomutsaokin A | C25H29O6 | White powder | (He et al*.,* 2021b) |
| 454 | amomutsaokin B | C25H27O6 | White powder | (He et al*.,* 2021b) |
| 455 | amomutsaokin C | C25H27O6 | White powder | (He et al*.,* 2021b) |
| 456 | amomutsaokin D | C25H27O6 | White powder | (He et al*.,* 2021b) |
| 457 | amomutsaokin E | C25H31O7 | White powder | (Heet al*.,* 2021b) |
| 458 | amomutsaokin F | C25H31O7 | White powder | (He et al*.,* 2021b) |
| 459 | amomutsaokin G | C25H31O7 | White powder | (Heet al*.,* 2021b) |
| 460 | amomutsaokin H | C25H29O7 | White powder | (He et al*.,* 2021b) |
| **Other** | | | |  |
| 461 | bornyl acetate | C12H20O2 | Colorless liquid | (Li et al*.,* 1998) |
| 462 | cyclooctanol | C8H16O | Colorless viscous liquid | (Fenget al*.,* 2010) |
| 463 | 2-fluoro-ethanol | C2H5FO | Colorless liquid with alcohol odor | (Zhaoet al*.,* 2004) |
| 464 | (*E*)-2-octen-1-ol | C8H16O |  | (Yanget al*.,* 2008) |
| 465 | (2*E*)-decenal | C10H21NO |  | (Yanget al*.,* 2008) |
| 466 | 2*E*-dodecen-1-ol | C12H24O |  | (Yanget al*.,* 2008) |
| 467 | cyclododecanol | C12H24O | white crystalline solid | (Fenget al*.,* 2010) |
| 468 | sabinen hydrate | C10H18O |  | (Zhanget al*.,* 2012) |
| 469 | anhydro-*d*-mannosan | C6H10O5 |  | (Qiu et al*.,* 2012) |
| 470 | 1,6-heptadiene,2,5-dimethyl- | C9H16 |  | (Qiu et al*.,* 2012) |
| 471 | 1,3,6-octatriene | C8H12 |  | (Zhang et al*.,* 2012) |
| 472 | cyclohexene,3,5,5-trimethyl- | C9H16 |  | (Qiuet al*.,* 2012) |
| 473 | bicyclo[6.1.0]non-4-ene | C9H14 |  | (Qiuet al*.,* 2012) |
| 474 | pyrrole-2-carboxylic acid | C5H5NO2 |  | (Hong et al*.,* 2015) |
| 475 | *R*-5-(1*R*,5*S*-dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxabicyclo[3,2,1]-oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid | C15H20O6 | White powder | (Liuet al*.,* 2020) |
| 476 | *p*-hydroxybenzene propanoic acid | C9H10O3 | White needle crystal | (Liuet al*.,* 2020) |
| 477 | indane-4-carboxaldehyde | C10H10O |  | (Yang et al*.,* 2008) |
| 478 | securinine | C13H15NO2 |  | (Qiu et al*.,* 2012) |
| 479 | cyclooctanol acetate | C10H18O2 |  | (Zhao et al*.,* 2004) |
| 480 | [2-amylfuran](https://www.chemsrc.com/en/cas/3777-69-3_196939.html) | C9H14O | Colorless to pale yellow liquid | (Yanget al*.,* 1994) |
| 481 | [2-heptylfuran](https://www.chemsrc.com/en/cas/3777-71-7_195757.html) | C11H18O | Colorless to pale yellow transparent liquid | (Zhaoet al*.,* 2004) |
| 482 | capryloyl acetate | C10H18O3 |  | (Zhao et al*.,* 2004) |
| 483 | 4-ethyl-3-nonen-5-yne | C11H18 |  | (Zhao et al*.,* 2004) |
| 484 | 1-tridecyne | C13H24 |  | (Qiuet al*.,* 2012) |
| 485 | hexadecanamide | C16H33NO | White crystalline powder or solid | (Qiuet al*.,* 2012) |
| 486 | oleamide | C18H35NO | White powder | (Qiu et al*.,* 2012) |
| 487 | *cis*-13-docosenoamide | C22H43NO | White flaky crystals | (Qiuet al*.,* 2012) |
| 488 | (+)-loliolide | C11H16O3 | Colorless needle crystal | (Liu et al*.,* 2020) |
| 489 | juvenile hormone | C16H26O3 |  | (Wu et al*.,* 1997) |
| 490 | oxandrolone | C19H30O3 | White crystal or powder | (Zhao et al*.,* 2004) |
| 491 | 2-n-Hexylfuran | C10H16O |  | (Liuet al*.,* 2021b) |
| 492 | cyclopropylmethanol | C4H8O | Colorless liquid | (Zhao et al*.,* 2004) |
| 493 | elemol | C13H17NO2 |  | (Yanget al*.,* 2008) |

**Table S4 Biological activities of monomer chemical components isolated from *A. tsao-ko***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **Extract/**  **EO/Components** | **Assays** | **Description** | **Concentration/dose** | ***In***  ***vivo/In***  ***vitro*** | **References** |
| **Anti-inflammation** | EAT | ELISA, Western Blot,  Immunofluorescence Microscop | Inhibits the activity of iNOS and COX-2 | IC50= 194.92 lg/mL for iNOS  IC50= 151.00 lg/mL for COX-2 | *In vitro* | (Li et al., 2014) |
|  | 6,7-dihydroxyindan-4-carbaldehyde | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（56.9 ± 0.5→4.1 ± 1.3） | *In vitro* | (Leeet al., 2008) |
|  | 6-hydroxyindan-4-carbaldehyde | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（60.4±3.8 ± 0.5→13.7 ± 4.8） | *In vitro* | (Leeet al*.*, 2008) |
|  | 6,7-dihydroxy-3,7-  dimethyl-oct-2-enoic acid | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（27.6 ± 4.9 ± 0.5→15.7 ± 6.1） | *In vitro* | (Lee et al., 2008) |
|  | Tsaokoin | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（61.3 ± 8.4→15.0 ± 3.7） | *In vitro* | (Lee et al., 2008) |
|  | Isotsaokoin | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（53.0 ± 6.3→0.5 ± 0.8） | *In vitro* | (Lee et al., 2008) |
|  | 8-oxogeraniol | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（43.7 ± 9.3→1.1 ± 1.9） | *In vitro* | (Lee et al., 2008) |
|  | p-menth-1-ene-5,6-diol | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（91.2 ± 3.3→64.2 ± 7.7） | *In vitro* | (Lee et al*.*, 2008) |
|  | 3*α*-hydroxycarvotagenone | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（68.8 ± 3.5→14.0 ± 5.8） | *In vitro* | (Lee et al., 2008) |
|  | Tsaokoarylone | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（68.8 ± 3.5→1.5 ± 4.4） | *In vitro* | (Lee et al., 2008) |
|  | 1,7-bis(4-hydroxy-3-methoxyphenyl)-4,6-heptadien-3-one | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（52.5 ± 0.3→1.5 ± 4.4） | *In vitro* | (Lee et al*.*, 2008) |
|  | (+)-hannokinol | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（46.2 ± 5.0→15.2 ± 3.4） | *In vitro* | (Lee et al*.*, 2008) |
|  | meso-hannokinol | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100μM; Relative NO production ( %)=（32.4 ± 9.4→5.5 ± 2.8） | *In vitro* | (Lee et al*.*, 2008) |
|  | Hannokinin | MTT and Griess assays | Inhibited LPS-induced NO production | Concentrations ranging from 1μM to 100 μM ; Relative NO production ( %)=（49.1 ± 2.7→1.5 ± 7.2） | *In vitro* | (Leeet al*.*, 2008) |
|  | Epicatechin | Griess assays | Inhibited NO production | C=100 μg/mL, Inhibition rate= 63.65% | *In vitro* | (Zhang et al., 2014a) |
|  | Quercetin | Griess assays | Inhibited NO production | C=100 μg/mL, Inhibition rate= 47.38% | *In vitro* | (Zhanget al., 2014a) |
|  | meso-hannokinol | Griess assays | Inhibited NO production | C=100 μg/mL, Inhibition rate= 45.18% | *In vitro* | (Zhanget al., 2014a) |
|  | Amotsaokonal B | MTT assays | Inhibited NO production | IC50=94. μM | *In vitro* | (Honget al*.,* 2015) |
|  | methyl linolenate | MTT assays | Inhibited NO production | IC50= 61.2 μM | *In vitro* | (Hong et al*.,* 2015) |
|  | 2,3- dihydro-2 - (4′ -hydroxy-phenylethyl) - 6 - [(3″,4″ - dihydroxy-5B - methoxy)phenyl] -4 – pyrone | MTT, Nitric Oxide Assay, Statistical Analysis | Inhibited NO production;  protected PC-12 cells from H2O2-induced damage | C= 100 μg/mL, Inhibition rate= 60.46 ± 0.23%  C=50 μg/mL, Cell viability = 80.34 ± 1.78 % | *In vitro* | (Zhang et al*.*, 2016a) |
|  | 4 - dihydro-2 - (4′ - hydroxy-  phenylmethyl) -6 - [(3″,4″ - dihydroxy-5″ - methoxyphenyl)methylene]-pyran-3, 5 - dione | MTT, Nitric Oxide Assay, Statistical Analysis | Inhibited NO production;  protected PC-12  cells from H2O2-induced damage | C= 100 μg/mL, Inhibition rate= 48.62 ± 0.38 %  C=50 μg/mL, Cell viability = 69.82 ± 1.57 % | *In vitro* | (Zhang et al*.*, 2016a) |
|  | 2',4',6'-trihydroxy-4-methoxy chalcone | MTT and Griess assays | Inhibitory LPS-induced NO production in RAW 264.7 cells | IC50= 10.9 μM | *In vitro* | (Kim et al., 2019b) |
|  | boesenbergin B | MTT and Griess assays | Inhibitory LPS-induced NO production in RAW 264.7 cells | IC50= 22.5 μM | *In vitro* | (Kimet al., 2019b) |
|  | 4-hydroxyboesenbergin B | MTT and Griess assays | Inhibitory LPS-induced NO production in RAW 264.7 cells | IC50= 13.2 μM | *In vitro* | (Kim et al., 2019b) |
|  | Tsaokoarylone | MTT and Griess assays | Inhibitory LPS-induced NO production in RAW 264.7 cells | IC50= 11.6 μM | *In vitro* | (Kim et al., 2019b) |
|  | Tsaokonol A | MTT and Griess assays | Inhibition NO production | IC50= 16.2 μM | *In vitro* | (Kimet al*.*, 2019b) |
|  | Tsaokonol B | MTT and Griess assays | Inhibition NO production | IC50= 14.0 μM | *In vitro* | (Kim et al*.,* 2019b) |
|  | Tsaokonol C | MTT and Griess assays | Inhibition NO production | IC50= 10.6 μM | *In vitro* | (Kim et al., 2019b) |
|  | Tsaokonol D | MTT and Griess assays | Inhibition NO production | IC50= 13.5 μM | *In vitro* | (Kim et al*.*, 2019b) |
|  | Tsaokonol E | MTT and Griess assays | Inhibition NO production | IC50= 41.5 μM | *In vitro* | (Kimet al*.*, 2019b) |
|  | Tsaokonol F | MTT and Griess assays | Inhibition NO production | IC50= 39.2 μM | *In vitro* | (Kim et al*.*, 2019b) |
|  | Tsaokonol G | MTT and Griess assays | Inhibition NO production | IC50= 26.1 μM | *In vitro* | (Kim et al*.*, 2019b) |
|  | Tsaokonol H | MTT and Griess assays | Inhibition NO production | IC50= 28.7 μM | *In vitro* | (Kim et al*.*, 2019b) |
|  | Tsaokonol I | MTT and Griess assays | Inhibition NO production | IC50= 30.6 μM | *In vitro* | (Kim et al*.*, 2019b) |
|  | Tsaokonol J | MTT and Griess assays | Inhibition NO production | IC50= 13.5 μM | *In vitro* | (Kim et al*.*, 2019b) |
|  | (1R,4S,6S)-1,6-dihydroxy-2-menthene | Griess reaction assay | Inhibit the overproduction of NO | IC50= 82.5 µM | *In vitro* | (Honget al., 2021a) |
| **Anti-diabetic** | Extract | *α*-amylase and  *α*-glucosidase inhibition assay | Inhibits the activity of *α*-amylase and *α*-glucosidase | IC50= 1.04 mg/mL for *α*-  Amylase (seeds)  IC50= 1.4 mg/mL for *α*-  glucosidase(seeds)  IC50= 1.24 mg/mL for *α*-  amylase(rinds)  IC50= 2.4 mg/mL for *α*-  glucosidase(rinds) | *In vitro* | (Hussainet al*.*, 2018) |
|  | 50% ethanol-water extract | Inhibitory assay of *α*-glucosidase | Inhibits the activity of *α*-glucosidase | IC50= 38.6 µg/mL | *In vitro* | (Heet al*.,* 2020b) |
|  | Methanol extracts | *α*-amylase, *α*-glucosidase, and  lipase activity assay | Inhibited lipase and *α* -glucosidase activities | IC50= 0.02 mg/mL for *α*-glucosidase | *In vitro* | (Yu et al*.,* 2010) |
|  |  | Plasma glucose assay | Inhibited lipase and *α* -glucosidase activities | About 100 mg/dL of polar  fraction | *In vivo* | (Yu et al*.,* 2010) |
|  | Tsaokopyranol E | MTT assays | Inhibit *α*-glucosidase activity | IC50= 89.6 ± 12.9 µM | *In vitro* | (He et al*.,* 2020a) |
|  | Tsaokopyranol H | MTT assays | Inhibit *α*-glucosidase activity | IC50= 59.4 ± 0.4 µM | *In vitro* | (He et al*.,* 2020a) |
|  | Tsaokopyranol I | MTT assays | Inhibit *α*-glucosidase activity | IC50= 67.3 ± 1.2 µM | *In vitro* | (He et al*.,* 2020a) |
|  | Tsaokopyranol J | MTT assays | Inhibit *α*-glucosidase activity | IC50= 65.6 ± 7.1 µM | *In vitro* | (He et al*.,* 2020a) |
|  | Tsaokopyranol K | MTT assays | Inhibit *α*-glucosidase activity | IC50= 97.0 ± 3.1 µM | *In vitro* | (He et al*.,* 2020a) |
|  | Phaeoheptanoxide | MTT assays | Inhibit *α*-glucosidase activity | IC50= 68.6 ± 0.4 µM | *In vitro* | (He et al*.,* 2020b) |
|  | tsaokols A | MTT assays | Inhibits the activity of *α*-glucosidase | IC50= 18.8 μmol/L | *In vitro* | (He et al*.,* 2021b) |
|  | tsaokols B | MTT assays | Inhibits the activity of *α*-glucosidase | IC50= 38.6 μmol/L | *In vitro* | (Heet al*.*, 2021b) |
|  | proanthocyanidin A-2 | MTT assays | Inhibits the activity of *α*-glucosidase and PTP1B | IC50=3.73 ± 0.88 µM  IC50= 201.45 ± 2.20 µM | *In vitro* | (He et al*.,* 2021b) |
|  | Amomutsaokin B | MTT assays | Inhibits the activity of PTP1B | IC50= 314.00 ± 2.54 µM | *In vitro* | (He et al*.,* 2021b) |
|  | Amomutsaokin C | MTT assays | Inhibits the activity of PTP1B | IC50= 266.31 ± 6.83 µM | *In vitro* | (He et al., 2021b) |
|  | Amomutsaokin F | Enzyme kinetics | Inhibits the activity of PTP1B | IC50= 317.51 ± 9.55 µM  Ki= 24.4 μM | *In vitro* | (He et al*.*, 2021b) |
|  | Flavanocoumarin | MTT assays | Inhibits the activity of PTP1B | IC50= 285.62 ± 2.84 µM | *In vitro* | (Heet al*.,* 2021b) |
|  | Amomutsaokin A | Enzyme kinetics | Inhibits the activity of *α*-glucosidase and PTP1B | Ki= 36.2 μM | *In vitro* | (He et al*.*, 2021a) |
|  | Tsaokoflavanols A | Dose−response relationships | Inhibits the activity of *α*-glucosidase | IC50=9.0 µM | *In vitro* | (He et al*.*, 2020) |
|  | Tsaokoflavanols B | Dose−response relationships | Inhibits the activity of *α*-glucosidase | IC50=7.7 µM | *In vitro* | (He et al*.,* 2020) |
|  | Tsaokoflavanols F | Dose−response relationships | Inhibits the activity of *α*-glucosidase and PTP1B | IC50=5.6 µM  IC50（PTP1B）= 56.4 µM | *In vitro* | (He et al*.,* 2020) |
|  | Tsaokoflavanols K | Dose−response relationships | Inhibits the activity of *α*-glucosidase | IC50=5.2 µM | *In vitro* | (He et al*.,* 2020) |
|  | Tsaokoflavanols R | Dose−response relationships | Inhibits the activity of *α*-glucosidase | IC50=6.3 µM | *In vitro* | (He et al*.,* 2020) |
|  | Tsaokoflavanols J | Dose−response relationships | Inhibits the activity of PTP1B | IC50= 75.1 µM | *In vitro* | (He et al*.,* 2020) |
|  | Tsaokoflavanols L | Dose−response relationships | Inhibits the activity of PTP1B | IC50= 73.0 µM | *In vitro* | (He et al*.,* 2020) |
|  | Tsaokoflavanols S | Dose−response relationships | Inhibits the activity of PTP1B | IC50= 69.8 µM | *In vitro* | (He et al*.,* 2020) |
| **Anti-bacterial** | 80% ethanol-water extract | Agar disk Diffusion method |  | MIC: 1, 2, and 2 mg/mL for *Staphylococcus aureus, Salmonella Typhimurium, and Pseudomonas* aeruginosa, respectively | *In vitro* | (Rahman et al*.,* 2017) |
|  | Extracts of 95% EtOH and EtOAc | Broth- dilution  method |  | C=50 μg/mL, extracts of 95% EtOH and EtOAc with inhibition of 93.06% and 99.08% | *In vitro* | (Liu et al*.,* 2018c) |
|  | AEO | Agar dilution method | Anti-infectious efficacy | MIC=22.49 ~ 1438.91 µg/mL | *In vitro* | (Dai et al*.,* 2016b) |
|  |  | mouse peritonitis model which was infected with *Staphylococcus aureus* or *Escherichia coli* | Anti-infectious efficacy | 1.84 g·kg-1·d-1.6, the survival rates of  mice infected with *Staphylococcus aureus* or *Escherichia* *coli* were 100.00% and 70.00% | *In vivo* | (Dai et al*.,* 2016b) |
|  | AEO | Liquid dilution  method TEM | anti-*T. vaginalis* activity | MLC = 44.97 lg/mL; IC50= 22.49 lg  /mL for *T. vaginalis* isolate Tv1;  MLC = 89.93 lg/mL; IC50= 44.97 lg/  mL for Tv2 | *In vitro* | (Dai et al*.,* 2015) |
|  | Geraniol | Liquid dilution  method TEM | anti-*T. vaginalis* activity | MLC = 342.96 lg/mL; IC50= 171.48 lg/mL for *T. vaginalis* isolate Tv1 and Tv2 | *In vitro* | (Daiet al*.,* 2015) |
|  | AEO | Agar dilution method | Activity against Gram-negative and Gram-positive bacteria | MIC: 2.94–5.86 mg/ml | *In vitro* | (Cuiet al*.,* 2017c) |
|  | AEO | Crystal violet assay  Membrane damages assay |  | MIC = 3.13 mg/mL, MBC= 3.13 mg/mL for *S. aureus*;  MIC = 6.25 mg/mL, MBC= 6.25 mg/mL for *B. subtilis*;  MIC = 6.25 mg/mL, MBC= 12.5 mg/mL for *S. typhimurium*  MIC = 3.13 mg/mL, MBC= 6.25 mg/mL | *In vitro* | (Guoet al*.,* 2017) |
|  | Ethyl acetate extracts | McFarland turbidimetry | Inhibits the activity of *B. subtilis* and *L. onocytog* | MIC=MBC=1.25 mg/mL for *B. subtilis* and *L. onocytog* | *In vitro* | (Tang et al*.,* 2020) |
| **Anti-cancer** | (2E,6E)-8-hydroxy-2,6-dimeth-  yl-2,6-octadienal | MTT assay | Antiproliferative activity | IC50= 82 ± 2 µM | *In vitro* | (Yang et al*.,* 2009a) |
|  | Tsaokoarylone | MTT assay | Antiproliferative activity | IC50= 46 ± 7 µM | *In vitro* | (Yang et al*.,* 2009a) |
|  | (2E,8E)-10-hy-droxy-decadienal | MTT assay | Antiproliferative activity | IC50= 52 ± 2 µM | *In vitro* | (Yang et al*.,* 2009b) |
|  | Isotsaokoin | MTT assay | Toxic for Hela human cancer cell lines | C > 80 µg/mL, Inhibition rate > 50% | *In vitro* | (Zhang et al*.,* 2015a) |
|  | Hannokinol | MTT assay | Toxic for A549 and HepG-2 human cancer cell lines | Inhibition rate(A549) = 65.9%  Inhibition rate(HepG-2) = 66.7% | *In vitro* | (Zhang et al*.,* 2015a) |
|  | 2,3-dihydro-2-(4′-hydroxy-phenylethyl)-6-[(3″,4″-dihydroxy-5″-methoxy)phenyl]-4-pyrone | MTT assay | Toxic for A549 human cancer cell lines | C = 160 µg/mL, Inhibition rate = 70.3% | *In vitro* | (Zhang et al*.,* 2015a) |
|  | 4-dihydro-2-(4′-hydroxy-phenylmethyl)-6-[(3″,4″-dihydroxy-5″-methoxyphenyl)methylene]-pyran-3,5-dione | MTT assay | Toxic for SMMC-7721 and HepG-2 human cancer cell lines | C = 160 µg/mL,  Inhibition rate(SMMC-7721) = 73.4%  Inhibition rate(HepG-2) = 68.3% | *In vitro* | (Zhang et al*.,* 2015a) |
| **Anti-obesity** | (2E,7Z,10Z,13Z)-hexadeca-2,7,10,13-tetraenoic acid | ELISAs assay | Inhibit lipase activity | C = 50 µg/mL, Inhibition rate = 50.07% | *In vitro* | (Liu et al*., 2*018b) |
|  | (2E,7Z)-tetradeca-2,7-dienoic acid | ELISAs assay | Inhibit lipase activity | C = 50 µg/mL, Inhibition rate= 61.56% | *In vitro* | (Liuet al*.,* 2018b) |
|  | (E)-tetradec-2-enoic acid | ELISAs assay | Inhibit lipase activity | C = 50 µg/mL, Inhibition rate= 59.37% | *In vitro* | (Liu et al*.,* 2018b) |
|  | (E)-dodec-2-enoic acid | ELISAs assay | Inhibit lipase activity | C = 50 µg/mL, Inhibition rate= 49.32% | *In vitro* | (Liu et al*.,* 2018b) |
|  | Coronadiene | ELISAs assay | Inhibit lipase activity | C = 50 µg/mL, Inhibition rate= 33.30% | *In vitro* | (Liu et al*.,* 2018b) |
|  | 3,4-dihydroxybenzoic acid | ELISAs assay | Inhibit lipase activity | C = 50 µg/mL, Inhibition rate= 35.88% | *In vitro* | (Liu et al*.,* 2018b) |
| **Antioxidant activity** | Ethanol (95%) extract and ethyl acetate fraction | DPPH radical- scavenging activity  assay | DPPH radical-scavenging activity | 90% DPPH radicals’ inhibition rate at 200 lg/mL | *In vitro* | (Zhang et al*.,* 2015b) |
|  | (+)-Epicatechin | ESR assay | Radical DPPH Scavenging Activity | IC50 = 12.55 ± 0.65 µM | *In vitro* | (Liu et al*.,* 2018b) |
|  | (−)-Catechin | ESR assay | Radical DPPH Scavenging Activity | IC50 = 12.66 ± 0.49 µM | *In vitro* | (Liu et al*.,* 2018b) |
|  | 2,6-Dimethoxyphenol | ESR assay | Radical DPPH Scavenging Activity | IC50 = 15.89 ± 2.07 µM | *In vitro* | (Liu et al*.,* 2018b) |
|  | Protocatechualdehyde | ESR assay | Radical DPPH Scavenging Activity | IC50 = 14.39 ± 3.31 µM | *In vitro* | (Liuet al*.,* 2018b) |
|  | (2E,7Z,10Z,13Z)-hexadeca-2,7,10,13-tetraenoic acid | Antioxidant activity assays | Radical DPPH Scavenging Activity | C = 100 μg/mL, Inhibition rate = 77.08% | *In vitro* | (Liu et al*.,* 2018b) |
|  | (2E,7Z)-tetradeca-2,7-dienoic acid | Antioxidant activity assays | Radical DPPH Scavenging Activity | C = 100 μg/mL, Inhibition rate =60.83% | *In vitro* | (Liuet al*.,* 2018d) |
|  | Isotsaokoin | DPPH assay | Radical DPPH Scavenging Activity | C = 100 μg/mL, Inhibition rate = 39.23% | *In vitro* | (Zhanget al*.,* 2015a) |
|  | Hannokinol | DPPH assay | Radical DPPH Scavenging Activity | C = 100 μg/mL, Inhibition rate = 28.65% | *In vitro* | (Zhanget al*.,* 2015a) |
|  | 2,3-dihydro-2-(4′-hydroxy-phenylethyl)-6-[(3″,4″-dihydroxy-5″-methoxy)phenyl]-4-pyrone | DPPH assay | Radical DPPH Scavenging Activity | C = 100 μg/mL, Inhibition rate = 58.55% | *In vitro* | (Zhang et al*.,* 2015a) |
|  | 4-dihydro-2-(4′-hydroxy-phenylmethyl)-6-[(3″,4″-dihydroxy-5″-methoxyphenyl)methylene]-pyran-3,5-dione | DPPH assay | Radical DPPH Scavenging Activity | C = 100 μg/mL, Inhibition rate = 79.04% | *In vitro* | (Zhanget al*.,* 2015a) |
|  | quercetin. | DPPH assay | Radical DPPH Scavenging Activity | C = 100 μg/mL, Scavenging > 80% | *In vitro* | (Zhang et al*.,* 2014a) |
|  | Daucosterol | DPPH assay | Radical DPPH Scavenging Activity | C = 100 μg/mL, Scavenging = 69.87% | *In vitro* | (Zhanget al*.,* 2014a) |
| **Neuroprotective** | Quercetin | Bioactivity-guided separation | Protects PC-12 cell viability induced by H2O2 | C = 50 mg/mL, Cell viability = 78.9% | *In vitro* | (Zhang et al*.,* 2014a) |
|  | Daucosterol | Bioactivity-guided separation | Protects PC-12 cell viability induced by H2O2 | C = 50 mg/mL, Cell viability = 75.6% | *In vitro* | (Zhang et al*.,* 2014a) |
|  | Epicatechin | Bioactivity-guided separation | Protects PC-12 cell viability induced by H2O2 | C = 50 mg/mL, Cell viability = 70.4% | *In vitro* | (Zhang et al*.,* 2014a) |
|  | quercetin-7*-O-β*-glucoside | Bioactivity-guided separation | Protects PC-12 cell viability induced by H2O2 | C = 50 mg/mL, Cell viability = 68.1% | *In vitro* | (Zhanget al*.,* 2014a) |
|  | meso-hannokinol | Bioactivity-guided separation | Protects PC-12 cell viability induced by H2O2 | C = 50 mg/mL, Cell viability = 63.8% | *In vitro* | (Zhanget al*.,* 2014a) |
|  | 2,3-dihydro-2-(4′-hydroxy-phenylethyl)-6-[(3″,4″-dihydroxy-5B-methoxy)phenyl]-4–pyrone | MTT assay | Promote PC-12 cell growth | C = 50μg/mL, Cell viability = 80.34 ± 1.78 % | *In vitro* | (Zhang et al*.,* 2016a) |
|  | 4-dihydro-2-(4′-hydroxy-phenylmethyl)-6-[(3″,4″-dihydroxy-5″-methoxyphenyl)methylene]-pyran-3,5-dione | MTT assay | Promote PC-12 cell growth | C=50μg/mL, Cell viability = 69.82 ± 1.57 % | *In vitro* | (Zhanget al*.,* 2016a) |
| **Other** | Eucalyptol | Contact toxicity | Kill *T. castaneum*(TC) and *L. serricorne*(LS) | LD50(TC) = 18.83 μg/adult  LD50(LS) = 15.58 μg/adult | *In vitro* | (Wang et al*.,* 2014) |
|  | Limonene | Contact toxicity | Kill *T. castaneum*(TC) and *L. serricorne*(LS) | LD50(TC) = 14.97 μg/adult  LD50(LS) = 13.66 μg/adult | *In vitro* | (Wang et al*.,* 2014) |
|  | Eucalyptol | Fumigant toxicity | Kill *T. castaneum*(TC) and *L. serricorne*(LS) | LC50(TC) = 5.47 mg/L air  LC50(LS) = 5.18 mg/L air | *In vitro* | (Wanget al*.,* 2014) |
|  | Limonene | Fumigant toxicity | Kill *T. castaneum*(TC) and *L. serricorne*(LS) | LC50(TC) = 6.21 mg/L air  LC50(LS) = 14.07 mg/L air | *In vitro* | (Wang et al*.,* 2014) |

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**Figure. S1** Price dynamics of *A. tsao-ko* in Yulin, Anguo, Baozhou, Hhuachi Chinese herbal

markets, 2016-2022

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