

**Fig. S1** HPLC fingerprints of different population in three medicinal plants. HPLC fingerprints obtained from wild populations and cultivated population and black dots represent peak. **a** HPLC fingerprints of ***P****.odoratum*; 1: Rutinum, 2: Dioscin. **b** HPLC fingerprints of ***A****.sessiliflorus*; 1: Chlorogenic acid, 2: Syringin(Eleutheroside B), 3: Eleutheroside E, 4: Isofraxidin, 5: Rutinum. **c** HPLC fingerprints of ***D****.nipponica*; 1: Dioscin, 2: Disogluside.

Table S1 Details of sampled of cultivated and wild populations for three medicinal plants

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| Population Sample plot Altitude(m) Quality Longitude and Latitude  |

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|  CBCL-1 Changbai Mountain 850 Wild N42°21′51″E127°59′23″ CBCL-2 Changbai Mountain  750 Wild N42°22′56″ E128°6′1″ JDCL Cultivation base 219 Cultivation N43°56′48″E125°14′26″  CBYZ Changbai Mountain  720 Wild N42°24′30″ E128°6′11″ JYYZ Jingyuetan 236 Wild N43°46′45″E125°28′35″ JDYZ Cultivation base 219 Cultivation N43°56′48″E125°14′26″ CBDW Changbai Mountain  750 Wild N42°22′55″ E128°1′3″ JDDW Cultivation base 219 Cultivation N43°56′48″E125°14′26″ |

Table S2 Sequences of SSR primers and annealing temperature

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| Primer Sequence (5′ to 3′) *Tm*(℃) | Primer Sequence (5′ to 3′) *Tm*(℃) | Primer Sequence (5′ to 3′) *Tm*(℃) |
| YZ-1F CAGGTGATGCCAGAGGTACT 50.0YZ-1R ATACCCTTTCCTATCGCTCCYZ-2F ACAGCAGAAAACACCACCTA 50.0YZ-2R AAATCCGACTAACATTACACAYZ-4F TTCCTCCTGGATCGCTGT 50.2YZ-4R CGGTAGAATAGCGGGTTGYZ-5F CTAGCCGCCCTTTCCCTT 57.5YZ-5R CGCCTTGATGTCCTCCAGYZ-8F TTCAGATCGGACCAGACG 55.0YZ-8R CAACTACTCCAGCAACGACYZ-9F GAAGCAGCAATCAAGCACC 52.0YZ-9R ACCCAATTCTCATCCTCGCYZ-10F GCCGTGGGAGATCATAGAG 53.5YZ-10R CAACATTGTCAGGCAGAGCYZ-11F TCTTCGTCGTCGTCATCATC 51.0YZ-11R GAGCTACCAGAGCTGGCAATYZ-16F ATCTTCTCCTCCTCGGTG 55.0YZ-16R CCCTATCCCTGTGTCTGCYZ-19F TCATTGTCCCCCAAGCTC 52.0YZ-19R CGGTTCTCGGCTTGTTCT | CLSY-1F GGGGACGCACGAATAATAGC 52.0CLSY-1R ACTGACTTCCCAATAAATAACLSY-2F CCGGCGGTACTTTATTTCTG 53.5CLSY-2R TGCTACGGTTCTTACATATACLSY-3F TATCCGAAGTATTTCCGTGA 55.0CLSY-3R ACAAGTCCAATCCCAATCTCCLSY-5F GATTCGCCAAGTCTTAAATG 50.2CLSY-5R AATTGATCTATTGAAGAAGAGACLSY-6F CGGATTTGAACCGATGACTT 52.0CLSY-6R ATTTATTGTCCTTGAATGAGTTCLSY-7F ATCCTTGGGCTTCGACTACC 55.0CLSY-7R GGCATACCTCTTCCGCTTTACLSY-8F GGTTTCGGATTGTCCACTA 52.0CLSY-8R GCATTGATTTCCATACCATACLSY-9F ACCAGTAGGTGAGATTTTCC 57.0CLSY-9R CTTGTTTTCCAGATCGTTATCLSY-10F GCGTGTCTACCGATTTCACC 53.5CLSY-10R ATCCAGTTCTAATAGACAAAAACCLSY-12F AAATTAAATGAGCTTTTACCC 53.5CLSY-12R ATGATAGTATGAGTAGTTTTTTGG | DGWJ-26F GGTGGCGACTAGATCAACG 51.0DGWJ-26R CCCTGTATAGCTTCTTCAATTDGWJ-27F AGATTCTCGTGAGTCCGTAT 57.4 DGWJ-27R CCGATTCCCTTCTATTCTACDGWJ-28F GTTGGATAGACGGATAGGAA 50.2 DGWJ-28R AAGGGAATGTTACTAATGGAA DGWJ-30F AGTTTAGTGTATTCCTTATCCC 50.2DGWJ-30R AAAGGAACCGGCACAATACDGWJ-31F AACGTCCACGAATTTGATC 52.0DGWJ-31R GGGAGAATTTGCACCTACTDGWJ-32F ATCCTTGGGCTTCGACTACC 52.0DGWJ-32R GAGATGGTGCGATTTGATTDGWJ-37F TAATGGCGGACAAACAAAA 50.0DGWJ-37R CACTGGACTTCCTAGATGACADGWJ-38F GGTGGCGACTAGATCAACG 50.9DGWJ-38R GCCTGACAAAACCCCTGTADGWJ-40F GTTGGATAGACGGATAGGAA 50.9DGWJ-40R CAAGGGAATGTTACTAATGGAADGWJ-41F GATTTGAACCGATGACTTAC 53.4DGWJ-41R TAAGCCACTATCCACTATGA |

YZ: *P.odoratum*; CLSY: *D.nipponica*; DGWJ: *A.sessiliflorus*

Table S3 Sequences of RFLP primers and annealing temperature

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| Species Primer Sequence (5′ to 3′) *Tm*（℃） |
| Bacteria63F CAGGCCTAACACATGCAAGCTC 53℃1387R GGGCGGWGTGTACAAGGCFungus  ITS1 TCCGTAGGTGAACCTGCGC 52℃ITS4 TCCTCCGCTTATTGATATGCActinomycetesACF GGCGGCCTATCAGCTTGTTG 52℃ACR CCGTACTCCCCAGGCGGGG |

Table S4 Genetic variation within and among populations of three medicinal plants revealed by AMOVA

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| Species Source df SS MS Est.Var. % *FST* P |  |  |
| *D.nipponica* Among Pops 2 59.324 29.662 1.502 31% 0.312 ＜0.001 Within Pops 50 165.694 3.314 3.314 69% Total 52 225.019 4.815 100%*A.sessiliflorus* Among Pops 1 8.921 8.921 0.253 6% 0.058 ＜0.001 Within Pops 36 148.211 4.117 4.117 94% Total 37 157.132 4.370 100%*P.odoratum* Among Pops 2 150.933 75.467 3.213 22% 0.223 ＜0.001 Within Pops 57 639.250 11.215 11.215 78% Total 59 790.183 14.428 100% |

df:degree of freedom, SS:sums of the squared deviations, MS:mean squared deviations, %:Total the percentage of the total variance.

Table S5 Similarity of HPLC fingerprints among populations of three medicinal plants

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| Population CBDW-J JDDW-J CBDW-Y JDDW-Y CBCL-2 CBCL-1 JDCL CBYZ JDYZ JYYZ |
| CBDW-J 1 0.873 0.485 0.399JDDW-J 0.873 1 0.438 0.355CBDW-Y 0.485 0.438 1 0.733JDDW-Y 0.399 0.355 0.733 1CBCL-2 1 0.377 0.828CBCL-1 0.377 1 0.344JDCL 0.828 0.334 1 CBYZ 1 0.985 0.855JDYZ 0.985 1 0.869 JYYZ 0.855 0.869 1  |

Table S6 Correlations between genetic structure and chromatographic fingerprints

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|  | Chemical composition |
| Species Pearson correlation coefficient |
| *A.Sessiliflorus*Chlorogenic acid Syringin Eleutheroside E Isofraxidin RutinumGenetic structure -0.176 -0.306 0.171 0.173 0.118*P.odoratum* Total polysaccharide Total flavoneGenetic structure 0.358 0.134*D.nipponica*Dioscin DisoglusideGenetic structure 0.445 0.220 |

\*p<0.05 \*\*p<0.01.