

**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](javascript:;) [Longitude](javascript:;) [and](javascript:;) [Latitude](javascript:;) |

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| CBCL-1 [Changbai Mountain](javascript:;) 850 Wild N42°21′51″E127°59′23″  CBCL-2 [Changbai Mountain](javascript:;)  750 Wild N42°22′56″ E128°6′1″ JDCL Cultivation base 219 Cultivation N43°56′48″E125°14′26″CBYZ [Changbai Mountain](javascript:;)  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](javascript:;)  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 50.0  YZ-1R ATACCCTTTCCTATCGCTCC  YZ-2F ACAGCAGAAAACACCACCTA 50.0  YZ-2R AAATCCGACTAACATTACACA  YZ-4F TTCCTCCTGGATCGCTGT 50.2  YZ-4R CGGTAGAATAGCGGGTTG  YZ-5F CTAGCCGCCCTTTCCCTT 57.5  YZ-5R CGCCTTGATGTCCTCCAG  YZ-8F TTCAGATCGGACCAGACG 55.0  YZ-8R CAACTACTCCAGCAACGAC  YZ-9F GAAGCAGCAATCAAGCACC 52.0  YZ-9R ACCCAATTCTCATCCTCGC  YZ-10F GCCGTGGGAGATCATAGAG 53.5  YZ-10R CAACATTGTCAGGCAGAGC  YZ-11F TCTTCGTCGTCGTCATCATC 51.0  YZ-11R GAGCTACCAGAGCTGGCAAT  YZ-16F ATCTTCTCCTCCTCGGTG 55.0  YZ-16R CCCTATCCCTGTGTCTGC  YZ-19F TCATTGTCCCCCAAGCTC 52.0  YZ-19R CGGTTCTCGGCTTGTTCT | CLSY-1F GGGGACGCACGAATAATAGC 52.0  CLSY-1R ACTGACTTCCCAATAAATAA  CLSY-2F CCGGCGGTACTTTATTTCTG 53.5  CLSY-2R TGCTACGGTTCTTACATATA  CLSY-3F TATCCGAAGTATTTCCGTGA 55.0  CLSY-3R ACAAGTCCAATCCCAATCTC  CLSY-5F GATTCGCCAAGTCTTAAATG 50.2  CLSY-5R AATTGATCTATTGAAGAAGAGA  CLSY-6F CGGATTTGAACCGATGACTT 52.0  CLSY-6R ATTTATTGTCCTTGAATGAGTT  CLSY-7F ATCCTTGGGCTTCGACTACC 55.0  CLSY-7R GGCATACCTCTTCCGCTTTA  CLSY-8F GGTTTCGGATTGTCCACTA 52.0  CLSY-8R GCATTGATTTCCATACCATA  CLSY-9F ACCAGTAGGTGAGATTTTCC 57.0  CLSY-9R CTTGTTTTCCAGATCGTTAT  CLSY-10F GCGTGTCTACCGATTTCACC 53.5  CLSY-10R ATCCAGTTCTAATAGACAAAAAC  CLSY-12F AAATTAAATGAGCTTTTACCC 53.5  CLSY-12R ATGATAGTATGAGTAGTTTTTTGG | DGWJ-26F GGTGGCGACTAGATCAACG 51.0  DGWJ-26R CCCTGTATAGCTTCTTCAATT  DGWJ-27F AGATTCTCGTGAGTCCGTAT 57.4  DGWJ-27R CCGATTCCCTTCTATTCTAC  DGWJ-28F GTTGGATAGACGGATAGGAA 50.2  DGWJ-28R AAGGGAATGTTACTAATGGAA  DGWJ-30F AGTTTAGTGTATTCCTTATCCC 50.2  DGWJ-30R AAAGGAACCGGCACAATAC  DGWJ-31F AACGTCCACGAATTTGATC 52.0  DGWJ-31R GGGAGAATTTGCACCTACT  DGWJ-32F ATCCTTGGGCTTCGACTACC 52.0  DGWJ-32R GAGATGGTGCGATTTGATT  DGWJ-37F TAATGGCGGACAAACAAAA 50.0  DGWJ-37R CACTGGACTTCCTAGATGACA  DGWJ-38F GGTGGCGACTAGATCAACG 50.9  DGWJ-38R GCCTGACAAAACCCCTGTA  DGWJ-40F GTTGGATAGACGGATAGGAA 50.9  DGWJ-40R CAAGGGAATGTTACTAATGGAA  DGWJ-41F GATTTGAACCGATGACTTAC 53.4  DGWJ-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*（℃） |
| Bacteria  63F CAGGCCTAACACATGCAAGCTC 53℃  1387R GGGCGGWGTGTACAAGGC  Fungus  ITS1 TCCGTAGGTGAACCTGCGC 52℃  ITS4 TCCTCCGCTTATTGATATGC  Actinomycetes  ACF GGCGGCCTATCAGCTTGTTG 52℃  ACR CCGTACTCCCCAGGCGGGG |

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

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| [Species](javascript:;) 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 0.399  JDDW-J 0.873 1 0.438 0.355  CBDW-Y 0.485 0.438 1 0.733  JDDW-Y 0.399 0.355 0.733 1  CBCL-2 1 0.377 0.828  CBCL-1 0.377 1 0.344  JDCL 0.828 0.334 1  CBYZ 1 0.985 0.855  JDYZ 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 Rutinum  Genetic structure -0.176 -0.306 0.171 0.173 0.118  *P.odoratum*  Total polysaccharide Total flavone  Genetic structure 0.358 0.134  *D.nipponica*  Dioscin Disogluside  Genetic structure 0.445 0.220 | |

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