

Table S1. List of *Carthamus tinctorius* L. samples used in this study

| Sample number | Tissue | Sampling site | Longitude | Latitude |
|---------------|--------|-------------------------------------|-----------|-----------|
| SCM1 | Flower | Jiayang City, Sichuan | 104.55 | 30.42 |
| SCM2 | Flower | Xindu District, Chengdu, Sichuan | 104.14 | 30.81 |
| SCM3 | Flower | Wenjiang District, Chengdu, Sichuan | 103.81401 | 30.692594 |
| YNM1 | Flower | Dali City, Yunnan | 100.31382 | 25.681749 |
| YNM2 | Flower | Linchang City, Yunnan | 100.14621 | 24.413066 |
| YNM3 | Flower | Kunming City, Yunnan | 102.83542 | 24.893876 |
| HNM1 | Flower | Jiaozuo City, Henan | 113.08772 | 34.947792 |
| HNM2 | Flower | Mengzhou City, Henan | 112.70138 | 34.89631 |
| HNM3 | Flower | Shangqiu City, Henan | 115.63313 | 34.396614 |
| XJM1 | Flower | Tacheng City, Xinjiang | 82.997491 | 46.209646 |
| XJM2 | Flower | Hashake City, Xinjiang | 81.324793 | 43.935395 |
| XJM3 | Flower | Changji City, Xinjiang | 87.308675 | 44.02038 |