附件 1
壁报格式参考

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道地药材多维评价专业委员会第七届学术年会

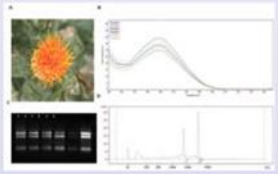
Full-length transcriptome sequences and the identification of putative genes for flavonoid biosynthesis in safflower

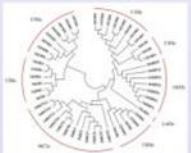
Jiang Chen[1,2,4], Xiaohui Tang[2,4], Chaoxiang Ren[1,2], Bin Wei[3], Yiyun Wu[1,2], Qinghua Wu[1,2], Jin Pei[1,2*]
[1] State Key Laboratory Breeding Base of Systematic Research, Development and Utilization of Chinese Medicine Resources, Chengdu 611137, Sichuan
[2] College of Pharmacy, Chengdu University of Traditional Chinese Medicine, Chengdu 611137, Sichuan
[3] College of Agronomy, Sichuan Agricultural University, Chengdu 611130, China
[4] These authors contribute equally to the work
[*] To whom correspondence should be addressed. E-mail: peixjin@163.com;

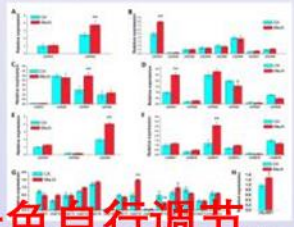
Summary

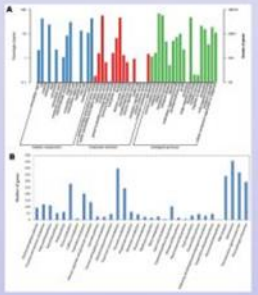
Background: The flower of the safflower (*Carthamus tinctorius* L.) has been widely used in traditional Chinese medicine for the ability to improve cerebral blood flow. Flavonoids are the primary bioactive components in safflower, and their biosynthesis has attracted widespread interest. Previous studies mostly used second-generation sequencing platforms to survey the putative flavonoid biosynthesis genes. For a better understanding of transcription data and the putative genes involved in flavonoid biosynthesis in safflower, we carry our study.

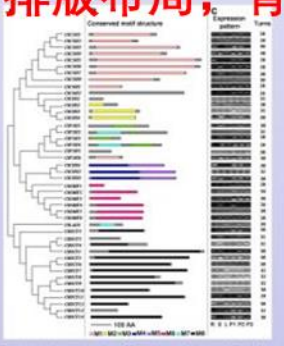
Results: High-quality RNA was extracted from six types of safflower tissue. The RNAs of different tissues were mixed equally and used for multiple size-fractionated libraries (1-2, 2-3 and 3-6k) library construction. Five cells were carried (2 cells for 1-2 and for 2-3k libraries and 1 cell for 3-6k libraries). 10.43Gb clean data and 38,302 de-redundant sequences were captured. 44 unique isoforms were annotated as encoding enzymes involved in flavonoid biosynthesis. The full length flavonoid genes were characterized and their evolutional relationship and expressional pattern were analyzed. They can be divided into eight families, with a large differences in the tissue expression. The temporal expressions under MeJA treatment were also measured, 9 genes are significantly up-regulated and 2 genes are significantly down-regulated. The genes involved in flavonoid synthesis in safflower were predicted in our study. Besides, the SSR and lncRNA are also analyzed in our study.











Conclusion

PacBio RS II was used to sequence the full-length transcriptome for safflower. Clean data, 10.43Gb, were obtained and 38,302 de-redundant sequences were captured. We screened all genes involved in the biosynthesis of flavonoids and analysed their expression patterns. Forty-four genes were divided into eight families that were annotated for involvement in the biosynthesis of flavonoids, and these genes showed large differences in expression. The genes involved in flavonoid synthesis in safflower were predicted in our study. The temporal expression of these genes under MeJA treatment was also measured . 9 genes are significantly up-regulated and 2 genes are significantly down-regulated. 5 genes are mainly participated in MeJA promoting the synthesis of flavonoids. Besides, the SSR and lncRNA are also analyzed in our study. Our results also provide a valuable resource for further study on safflower.

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