**Additional file 2.**

The cytochrome P450-dependent monooxygenase genes of barley identified in the current study.

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| --- | --- | --- | --- | --- | --- | --- |
| **№** | **Location****(EnsemblPlant)** | **Gene hit** | **Subject****(IPK)** | **Percentage, %*****F*3*′H-1* / *F3′5′H-1*** | **Annotation****(BARLEX)** | **Gene** |
| 1. | Chromosome chr1H: 556,691,612-556,693,908 | HORVU1Hr1G094880 | morex\_contig\_1575828;  | 100 / 69 | Cytochrome P450 flavonoid 3',5'-hydroxylase | *F3′H-1*  |
| 2. | Chromosome chr4H: 534,190,658-534,192,411 | HORVU4Hr1G063780 | morex\_contig\_1575914 | 71 / 99 | Cytochrome P450 superfamily protein | *F3′5′H-1* |
| 3. | Chromosome chr6H: 6,328,401-6,331,022 | HORVU6Hr1G002400 | morex\_contig\_1570242;  | 73 / 63 | Cytochrome P450 flavonoid 3',5'-hydroxylase | *F3′H-2* |
| 4. | Chromosome chr6H: 563,621,087-563,622,955 | HORVU6Hr1G087250 | morex\_contig\_1635985; morex\_contig\_139393;  | 76 / 8068 / 81 | Cytochrome P450 superfamily protein | *F3′5′H-2*  |
| 5. | Chromosome chr6H: 563,810,378-563,812,260 | HORVU6Hr1G087310 | morex\_contig\_366097;  | 68 / 82 | Flavonoid 3',5'-hydroxylase | *F3′5′H-3* |
| 6. | Chromosome chr7H: 9,879,963-9,884,227 | HORVU7Hr1G007580 | morex\_contig\_241646; morex\_contig\_1582601;  | 67 / 67- / 70 | Cytochrome P450 superfamily protein | *F3′5′H-4*  |