

EKSPRESI TEMPORAL GEN *FaCHS* PADA PERTUMBUHAN DAN PERKEMBANGAN BUAH STROBERI (*Fragaria x ananassa* D. 'Festival' & *Fragaria vesca* L. subsp. *californica* Cham. & Schltdl. 'Californica')

Rindi Antika

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INTISARI

Tanaman stroberi (*Fragaria* spp.) merupakan tanaman *herbaceous* tahunan dan termasuk kedalam Familia Rosaceae. Studi genetika molekular dalam perkembangannya telah memberikan penjelasan mengenai gen-gen pengontrol formasi pigmen warna buah khususnya pada stroberi. Penelitian terbaru menunjukkan bahwa gen *FaCHS* (*Chalcone synthase*) adalah gen pertama yang berperan dalam jalur flavonoid. Tujuan dari penelitian ini adalah untuk mempelajari pertumbuhan dan perkembangan berdasarkan karakter fenotipik buah stroberi kultivar Festival dan Californica dan untuk mengetahui ekspresi temporal gen *FaCHS* buah stroberi pada masing-masing tahap pertumbuhan dan perkembangan buah serta membandingkan hasil ekspresi gen *FaCHS* buah stroberi kultivar Festival dan Californica. Sampel buah pada setiap tahap pertumbuhan dan perkembangan umur buah yaitu *Green* (8 hari), *White* (18 hari), *Pink* (22 hari) dan *Red* (25 hari) diambil dari Kawasan Agrowisata Banyuroto, Sawangan, Kabupaten Magelang, Jawa Tengah. Penelitian ini dilakukan di Laboratorium Genetika dan Pemuliaan Fakultas Biologi UGM, Laboratorium FALITMA UGM, Laboratorium Genetika dan Pemuliaan Tanaman Fakultas Pertanian UGM, Laboratorium Mikrobiologi UNY dan LPPT UGM. Analisis ekspresi dilakukan menggunakan metode *Real time* PCR didasarkan pada deteksi fluoresensi yang diproduksi oleh molekul reporter yang meningkat sejalan dengan berlangsungnya proses PCR. Hasil pengamatan karakter fenotipik menunjukkan bahwa buah stroberi mengalami pertumbuhan dan perkembangan dibuktikan dengan peningkatan diameter vertikal maupun horizontal pada buah dan terjadinya perubahan warna buah dari hijau menjadi merah. Hasil ekspresi temporal gen pada setiap tahap pertumbuhan dan perkembangan umur buah menunjukkan ekspresi tertinggi yaitu pada buah tahap *Red* (25 hari) sedangkan paling rendah yaitu pada buah tahap *Pink* (22 hari). Hasil ekspresi temporal gen *FaCHS* pada buah stroberi kultivar Festival dan Californica paling optimal yaitu pada buah kultivar Festival.

Kata kunci : Stroberi, ekspresi temporal gen, *FaCHS*, *Real time* PCR.



THE TEMPORAL EXPRESSION OF *FaCHS* GENE IN THE GROWTH AND DEVELOPMENT OF STRAWBERRY FRUIT (*Fragaria x ananassa* D. 'Festival' & *Fragaria vesca* L. subsp. *californica* Cham. & Schltdl. 'Californica')

Rindi Antika

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ABSTRACT

Strawberry (*Fragaria* spp.) is a type of herbaceous plants that belongs to the Rosaceae family. Recently, the study of genetics and molecular has provided an explanation about controlled gene of fruit colour pigment formations, especially strawberry. Recent research shows that *FaCHS* (Chalcone synthase) was the first gene that influence in the flavonoid pathway. The research aimed to : study the growth and development based on phenotypic characters of strawberry cultivar Festival and Californica, determine the information about temporal expression of *FaCHS* gene in the each stage of fruit's age growth and development, and compare the results of *FaCHS* gene expression in strawberry Festival and Californica cultivar. The sample of fruit on each stage of fruit's age growth and development consist of Green (8 days), White (18 days), Pink (22 days), and Red (25 hari) which taken from Banyuroto Agrotourism Area, Sawangan, Magelang district, Central Java. This research was conducted in the laboratory of Genetics and Breeding (Faculty of Biology, UGM) laboratory of FALITMA UGM, laboratory of Genetics and Plant Breeding (Faculty of Argiculture, UGM), laboratory of Microbiology UNY, and LPPT UGM. Expression analysis were performed using *Real time* PCR method was based on the detection of fluorescence produced by the reporter molecule that increases with the process of PCR. The observation of phenotypic characters showed that strawberries growth and development was evidenced by the increase in the diameter vertically or horizontally on the fruit and the color change from Green to Red fruit. The result of the gene temporal expression on each fruit's age growth and development showed that the higher expression was on the Red stage fruit (25 days), while the lowest expression was on the Pink stage fruit (22 days). The most optimal results of temporal gene expression between Festival and Californica strawberry cultivar was Festival cultivar.

Keywords : Strawberry, temporal expression of gene, *FaCHS*, *Real time* PCR.