

KARAKTER FENOTIP DAN EKSPRESI GEN *FaCHS* dan *FaPYR1* PADA STROBERI (*Fragaria x ananassa* ‘Kristal’ dan ‘Kp-Brite’) HASIL INDUKSI 1-Naphtaleneacetic Acid

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INTISARI

Stroberi (*Fragaria x ananassa*) merupakan buah yang digemari karena memiliki rasa yang enak, wangi dan warna yang menarik. Buahnya mengandung antosianin dan senyawa fenolik yang mampu mendegenerasi penyakit seperti kanker dan jantung. Salah satu upaya peningkatan kualitas buah stroberi adalah melalui peningkatan ketahanan buah. Hormon NAA diketahui mampu menunda kematangan buah sehingga efektif dalam penundaan pematangan buah. Gen *FaCHS* dan *FaPYR* merupakan gen yang berperan dalam penundaan pematangan buah. Pada penelitian ini bertujuan untuk mengetahui pengaruh NAA terhadap karakter fisiologi stroberi, profil gen *FaCHS* dan *FaPYR1*, serta mengetahui perbedaan ekspresi gen *FaCHS* dan *FaPYR1* antara stroberi kontrol dan hasil perlakuan NAA. Penelitian dilakukan dengan menginduksi hormon NAA 10 ppm, 30 ppm, dan 60 ppm pada buah stroberi dari kawasan Agrowisata Banyuroto, Magelang, Jawa Tengah. Sampel buah pada empat tahap pertumbuhan dan perkembangan buah yaitu *green*, *white*, *pink* dan *red* diisolasi menggunakan *Nucleon Phytopure Kit*. Gen *FaCHS* dan *FaPYR1* diamplifikasi menggunakan metode *Polymerase Chain Reaction*. Analisis ekspresi dilakukan menggunakan metode *Real Time PCR*. Hasil pengamatan menunjukkan bahwa perlakuan NAA 10 ppm, mampu meningkatkan diameter dan berat buah pada kultivar Kristal. Amplifikasi fragmen DNA gen *FaCHS* tidak terdeteksi pada kultivar Kp-Brite setelah perlakuan NAA 60 ppm, sedangkan amplifikasi fragmen DNA gen *FaPYR1* hanya dapat dideteksi pada tahap *pink* dan *red* kultivar Kristal dengan perlakuan NAA 10 ppm, serta kultivar Kp-Brite perlakuan 30 ppm dan tahap *white* perlakuan 10 ppm. Peningkatan ekspresi gen *FaCHS* dan *FaPYR1* pada kultivar Kristal, tertinggi terjadi pada perlakuan NAA 10 ppm. Pada kultiva Kp-Brite, peningkatan ekspresi gen *FaCHS* tertinggi terjadi pada perlakuan NAA 60 ppm sedangkan *FaPYR1* pada perlakuan NAA 30 ppm.

Kata kunci: *FaCHS*, *FaPYR1*, *Fragaria x ananassa*, gen penghambatan kematangan, 1-Naphtaleneacetic acid

PHENOTYPIC CHARACTERS AND EXPRESSION OF *FaCHS* and *FaPYR1* GENES IN STROBERRIES (*Fragaria x ananassa* ‘Kristal’ and ‘Kp-Brite’) INDUCED BY 1-Naphtaleneacetic Acid

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ABSTRACT

Strawberry (*Fragaria x ananassa*) is a non-climatic fruit that was popular because of good taste, fragrant and attractive colors. It contains anthocyanin and other phenolic compounds which are capable of degenerating diseases such as cancer and heart diseases. One of effort to increase the quality of strawberries was by increasing the fruit resistance. *1-Naphtaleneacetic acid* (NAA) hormone is known able to delay ripening. *FaCHS* and *FaPYR1* genes play a role in fruit development, especially in ripening strawberry fruit. The purpose of this study was to know the effect of NAA on physiological character of plant and the effect of NAA on profile gene *FaCHS* and *FaPYR1*, and also to know the differences in *FaCHS* and *FaPYR1* gene expression between control and NAA treatment. It was conducted by inducing NAA 10 ppm, 30 ppm and 60 ppm in strawberry plants from the Banyuroto, Magelang, Central Java. Fruit samples from four stages of fruit growth and development in green, white, pink and red phases an these were isolated using *Nucleon Phytopure Kit* method. *FaCHS* and *FaPYR1* gene were amplified using the *Polymerase Chain Reaction* method. Analysis of gene expression used the *Real Time* PCR method. The results of the study showed that the NAA 10 ppm treatment was able to increase the diameter and weigth of the fruit in Kristal cultivars. Amplification of DNA fragments of *FaCHS* gene could not be detected in Kp-Brite cultivars with NAA 60 ppm treatment, while amplification of DNA fragments of *FaPYR1* gene could only be detected in the pink and red stage of Kristal cultivars with NAA 10 ppm treatment, and also in white stage of Kp-Brite cultivars with NAA 10 ppm treatment and all stage with NAA 30 ppm treatment. The increase in *FaCHS* and *FaPYR1* gene expression in Kristal cultivars was highest in the NAA 10 ppm treatment. In Kp-Brite cultivars, the highest increase in *FaCHS* gene expression occurred at NAA 60 ppm while *FaPYR1* at NAA 30 ppm treatment.

Keywords: delay ripening genes, *FaCHS*, *FaPYR1*, *Fragaria x ananassa*, *1-Naphtaleneacetic acid*