

**PERANCANGAN PRIMER DAN DETEKSI CpG ISLAND SECARA IN
SILICO PADA GEN HSP90 AYAM (*Gallus gallus*)**

SKRIPSI

Diajukan sebagai bagian dari syarat untuk memperoleh gelar Sarjana Sains
Program Studi Biologi



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Sebuah skripsi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
Sarjana Sains pada Program Studi Biologi, Departemen Pendidikan Biologi,
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PERNYATAAN

Dengan ini saya menyatakan bahwa skripsi dengan judul "**PERANCANGAN PRIMER DAN DETEKSI CpG ISLAND SECARA IN SILICO PADA GEN HSP90 AYAM (*Gallus gallus*)**" ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung risiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

Bandung, Januari 2022

Yang membuat pernyataan



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Nisa Sholihatul Ummah

PERANCANGAN PRIMER DAN DETEKSI CpG ISLAND SECARA *IN SILICO* PADA GEN HSP90 AYAM (*Gallus gallus*)

ABSTRAK

Gen HSP90 dapat dimanfaatkan sebagai marker cekaman panas pada ayam. Isoform gen HSP90 ayam terdiri dari HSP90 α (HSP90AA1 dan HP90AB1) dan HSP90 β (HSP90B1). Masing-masing isoform tersebut memiliki karakteristik struktur dan polimorfisme gen yang berbeda-beda dan belum banyak diteliti. Oleh sebab itu dilakukan perancangan primer dan deteksi CpG *island* dengan menggunakan perangkat lunak Primer3, Netprimer, dan MethPrimer. Hasil penelitian menunjukkan 24 kandidat primer pada gen HSP90AA1 (9), HSP90AB1 (10) dan HSP90B1 (5) yang dapat digunakan untuk melihat polimorfisme yang memungkinkan sebagai marker cekaman panas pada gen HSP90 ayam. Deteksi potensi CpG *island* dilakukan pada daerah promoter dan ekson pertama, hal tersebut terkait metilasi yang terjadi pada daerah promoter yang mempengaruhi ekspresi gen. Deteksi CpG *island* menghasilkan hanya satu CpG *island* pada gen HSP90AA1 dan dua CpG *island* pada gen HSP90AB1 dan HSP90B1. Diharapkan hasil penelitian ini dapat digunakan untuk penelitian database cekaman panas pada ayam lokal Indonesia.

Kata kunci: CpG *island*, HSP90 ayam, *In silico*, Primer

IN SILICO PRIMER DESIGN AND CpG ISLAND DETECTION IN HSP90 GENE CHICKEN (*Gallus gallus*)

ABSTRACT

The HSP90 gene can be used as a marker of heat stress in chickens. The chicken HSP90 gene isoforms consist of HSP90 α (HSP90AA1 and HP90AB1) and HSP90 β (HSP90B1). Each of these isoforms has different characteristics and gene polymorphisms and has not yet been widely studied. Therefore, primer design and detection of CpG islands were carried out using Primer3, Netprimer, and MethPrimer software. The results showed 24 primer candidates in the HSP90AA1 (9), HSP90AB1 (10) and HSP90B1 (5) genes that could be used to see possible polymorphisms as markers of heat stress in the chicken HSP90 gene. Detection of potential CpG islands was carried out in the promoter region and the first exon, this was related to methylation that occurred in the promoter region that affected gene expression. Detection of CpG islands resulted in only one CpG island in the HSP90AA1 gene and two CpG islands in the HSP90AB1 and HSP90B1 genes. Hopefully, that the results of this study can be used for research on heat stress databases in Indonesian local chickens.

Keywords: *CpG island, HSP90 chicken, In silico, Primer*

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