

KLONING GEN MAJOR AMPULLATE SPIDROIN-1 (*MaSp-1*) PADA *Nephila Sp.* (*Araneae: Araneidae*)

Abstrak

Benang sutera yang disintesis oleh laba-laba merupakan serat yang memperlihatkan superioritas terkait kekuatan dan elastisitas. Terdapat tujuh jenis protein serat yang disintesis laba-laba dan protein *dragline* yang dikode oleh gen *major ampullate spidroin-1 (MaSp-1)* yang merupakan protein penyusun serat terkuat. Gen *MaSp-1* ini berpotensi untuk ditransformasikan ke dalam tanaman dalam upaya peningkatan kualitas serat tanaman. Penelitian ini bertujuan untuk mengisolasi gen *major ampullate spidroin-1 (MaSp-1)* dengan metode *PCR-based cloning*. Penelitian ini telah berhasil mengisolasi 2 fragmen gen pengkode protein FLJ37770 dari fragmen 400 bp, dan gen *putative* pengkode enzim *glucose dehydrogenase* dan *alcohol dehydrogenase* dari fragmen 1100 bp dengan metode *PCR-based cloning*. Fragmen 400 bp memiliki persentase kemiripan 70% dengan sekuens gen yang mengkode protein FLJ37770 (LOC107170600), sedangkan fragmen 1100 bp memiliki kemiripan 70% dengan sekuens gen pengkode putatif enzim *glucose dehydrogenase* dan *alcohol dehydrogenase* dari *Parasteatoda tepidariorum*. Ketiga gen ini diketahui berperan dalam biosintesis serat.

Keywords: *major ampullate spidroin-1, PCR-based cloning, protein FLJ37770, glucose dehydrogenase, alcohol dehydrogenase*



CLONING OF MAJOR AMPULLATE SPIDROIN-1 (*MaSp-1*) GENE FROM *Nephila* sp. (*Araneae: Araneidae*)

Abstract

The aim of this study was to isolate *major ampullate spidroin-1 (MaSp-1)* gene. This gene encodes the strongest fiber conformation protein synthesized by spider genus *Nephila* and have a potential to be transformed in order to increase plant fiber quality. In this study two genes encoding FLJ3330 protein from the first fragment (400 bp) and gene encoding glucose dehydrogenase and alcohol dehydrogenase from second fragment (1.100bp) were successfully isolated by using PCR-Based cloning method. The first fragment has 70% similarity with gene sequence encoding protein FLJ37770 (LOC107170600), meanwhile the second fragment has 70% similarity with sequence gene encoding *glucose dehydrogenase* and *alcohol dehydrogenase*. All those three genes are known to be involved in fiber biosynthesis in spider.

Keywords: *major ampullate spidroin-1, PCR-based cloning, protein FLJ37770, glucose dehydrogenase, alcohol dehydrogenase*

