

GENOME-WIDE ANALYSIS OF SBP-BOX GENE FAMILY IN PI GEONPEA (*CAJANUS CAJAN L.*)

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Worldwide, Pigeonpea (Cajanus cajan L.) is a protein source. SBP-box transcription factors are crucial for plant development and regulation of stress resistance. The SBP genes in Pigeonpea were examined utilizing genomic information. Using databases, PlantTFDB and NCBI, SBP-box family genes of Pigeonpea were identified and then characterized in silico using bioinformatics tools. In this study, 5 major chromosomes out of 11 and an unplaced scaffold of the Pigeonpea were found to have 24 SBP genes. Significant differences in CcaSBPs protein length, molecular weight, GRAVY value (grand average of hydropathicity), and theoretical isoelectric point were observed. It was shown by Gene Structure Display Server (GSDS) that all CcaSBP genes contain one or more introns. CcaSBP proteins and SBP proteins from other species (A. thaliana and O. sativa) were analyzed phylogenetically and grouped into seven major groups (I, II, III, IV, V, VI, VII). Through this, an effort has been made to present unique information on CcaSBP genes to study Pigeonpea growth and stress mechanisms.

Key words: *Cajanus cajan*, Development, Gene structure, Phylogenetic analysis, SBP-box gene family.

ПОВНОГЕНОМНИЙ АНАЛІЗ РОДИНИ ГЕНІВ SBP ГОЛУБИНОГО ГОРОХУ (*CAJANUS CAJAN L.*)

У всьому світі голубиний горох (*Cajanus cajan L.*) вважається джерелом білку. Транскрипційні фактори родини SBP є надзвичайно важливими для розвитку рослин і регуляції стресостійкості. Вивчення генів SBP голубиноного гороху проходило за використання геномної інформації. Визначення генів родини SBP голубиноного гороху проводили за допомогою баз даних, PlantTFDB та NCBI, потім характеризували їх in silico, використовуючи інструменти біоінформатики. У цьому дослідженні було виявлено, що 5 основних хромосом із 11 та невстановлений каркас голубиноного гороху мали 24 SBP гени.

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Спостерігали значні відмінності в довжині білків CcaSBP, їхній молекулярній вазі, показниках GRAVY (загальне середнє значення гідропатичності) і теоретичній ізоелектричній точці. За допомогою Gene Structure Display Server (GSDS) було показано, що всі гени CcaSBP містять один або декілька інтронів. Білки CcaSBP та білки SBP інших видів рослин (*A. thaliana* та *O. sativa*) було проаналізовано з філогенетичної точки зору та згруповано в сім основних груп (I, II, III, IV, V, VI, VII). Таким чином, було зроблено спробу представити унікальну інформацію про гени CcaSBP для вивчення росту голубиноного гороху та механізмів стресу.

Ключові слова: *Cajanus cajan*, розвиток, структура гену, філогенетичний аналіз, родина генів SBP.

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