

13th Biotechnology Congress

November 28-30, 2016 San Francisco, USA

Novel technique to develop transgenic selectable marker free pigeon pea (*Cajanus cajan*) conferring resistance against pod borer *Helicoverpa armigera*

Gourab Ghosh¹, Dipankar Chakraborti¹, Shreeparna Ganguly¹ and Rituparna Kundu Chaudhuri²

¹St. Xavier's College, India

²Krishnagar Government College, India

Pigeon pea is one of the major grain legumes of tropics and subtropics, covering vast regions of developing countries from Africa, Asia to Latin America. It ranks fifth in area among pulses after soybean, common bean, peanut and chickpea. Globally, pigeon pea is cultivated on 4.92 million hectares with an annual production of 3.65 metric tons and productivity of 898 kg/ha². As they are grown in harsh environments and exposed to a variety of biotic and abiotic stresses, their productivity has not increased conspicuously for the last 50 years. Among many insect pests, the pod borer *Helicoverpa armigera* causes significant damage to this crop. It is the most devastating Lepidopteran pest and causes extensive economic losses to the tune of US\$ 300 million annually. The present study seeks to protect pigeon pea plants from *H. armigera* infestation by incorporating *cry1Ac* and *cry2Aa* genes, through a unique and efficient gene transfer method. An *Agrobacterium tumefaciens*-mediated transformation strategy was implemented using *in vitro* transgenic shoot-grafting technique. *A. tumefaciens* harboring different binary vectors containing *cry1Ac* and *cry2Aa* genes were used for transgenic pigeon pea development. An overall 7-9% of transformation frequency was recorded. After monitoring transgene integration by Southern hybridization, transgenic T1 and T2 lines were further analyzed by western blot, ELISA and insect bioassay. Transgenic lines obtained, exhibited optimum expression of *Cry1Ac* and *Cry2Aa* proteins. This study was further extended to the development of selectable marker (*nptII*) free *cry1Ac* expressing transgenic lines using *cre-lox* mediated marker elimination system.

Biography

Gourab Ghosh is currently pursuing his PhD in Transgenic Crop Science from St. Xavier's College, University of Calcutta, India. He has two publications in reputed, peer-review journals to his credit.

gourab7@gmail.com

Notes: