

The CaChiVI2 gene of Capsicum annuumL. confers resistance against heat stress and infection of Phytophthora capsici

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Abstract Extreme environmental condition is a serious issue affecting crop growth and development, resulting in substantial reduction in crop yield and quality. However, chitin-binding proteins (CBP) family member *CaChiVI2* plays a crucial role in eliminating the impact of adverse environmental conditions. For the first time it was discovered that *CaChiVI2* (Capana08g001237) gene of pepper (*Capsicum annuum* L.) had a role in resistance to heat stress and physiological processes. The full-length open-reading frame (ORF) of *CaChiVI2* (606-bp, encoding 201-amino acids), was cloned into TRV2:*CaChiVI2* vector for silencing. The *CaChiVI2* gene carries heat shock elements (HSE, AAAAAATTTC) in the upstream region, and thereby showing sensitivity to heat stress at the transcriptional level. The silencing effect of *CaChiVI2* in pepper resulted in increased susceptibility to heat and *Phytophthora capsici* infection. It was evident from the severe symptoms on leaves, the increase in O₂ and H₂O₂ accumulation, higher malondialdehyde (MDA), relative electrolyte leakage (REL) and lower proline contents compared with control plants. Furthermore, the transcript level of other resistance responsive genes were also altered



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Publications:

1. Evaluating the Mechanical Properties of Admixed Blended Cement Pastes and Estimating its Kinetics of Hydration by Different Techniques
2. Genetic Diversity Using Random Amplified Polymorphic DNA (RAPD) Analysis for *Aspergillus niger* isolates
3. Au-Ag-Cu nanoparticles alloys showed antifungal activity against the antibiotics-resistant *Candida albicans*
4. Induce mutations for Bavistin resistance in *Trichoderma harzianum* by UV-irradiation
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[5th International Conference On Plant Science and Physiology February 17-18,2020 Osaka, Japan.](#)

Abstract Citation: [The CaChiVI2 gene of Capsicum annuumL. confers resistance against heat stress and infection of Phytophthora capsici with Zhen-Hui Gong. February 17-18,2020 Osaka, Japan](#)