

**Abstract:**

Citrus bacterial canker is one of the most important agricultural citrus diseases worldwide. This disease is caused by the bacterium *Xanthomonas axonopodis* pv.citri (Xac). The Xac has different mechanisms in virulence. One of these mechanisms is the attachment of bacterial flagellin to the plant cell surface receptors.

The aim of this research was to study the virulence genes in citrus canker and plant surface receptors that bind to bacterial flagellin. Then, based on RNAi mechanism, a genetic construct in order to knockdown the gene has been designed. In this case after identification and amplification of *fls $\gamma$*  gene in lemon, DNA primers complementary to the target gene were designed with two main specifications including sense and antisense direction as the template, and containing suitable sites for cloning in pHANNIBAL vector.

Therefore, the construct with inverted repeat at the ends and intron sequence in the middle were cloned in pHANNIBAL vector. According to this sequence design, it is expected that after transcription in the cell cytoplasm, the gene silencing construct make hairpin ds-RNA structure.

Keywords: Citrus canker, Resistance, Gene Silencing, RNAi, Surface Receptors



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**A Thesis Submitted for the Degree of M. Sc.  
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**Constructing the gene silencing element to make  
resistance in lemon(*Citrus limon*) against  
virulence citrus canker bacteria**

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