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Title (English)

Characterization of the *Salmonella typhimurium* E3 ubiquitin ligase SspH1

Title (Swedish)

Abstract

During the course of this project I have characterized the enzymatic activity of the ubiquitin ligase SspH1, an enzyme secreted by *Salmonella typhimurium* and translocated to eukaryotic cells upon infection. The ubiquitin signaling pathway does not exist in bacterial cells and it is believed that the bacterial ubiquitin ligases are hijacking the eukaryotic ubiquitin pathway. The biological purpose of SspH1 is not yet fully understood and the aims of this project was to characterize the enzymatic mechanism of SspH1 to better understand its function. The crystal structure of SspH2, another Salmonella ubiquitin ligase with similar sequence to SspH1, has shown that a domain consisting of leucine rich repeats (LRR) is folded over the C-terminal catalytic domain. This finding, and the fact that the catalytic domain alone has more activity than the full length SspH1, has given rise to the hypothesis that when the LRR domain is interacting with a substrate, a conformational change occurs and the activity of SspH1 is increased. I have found that when SspH1 is interacting with its known substrate, the ACC domain of protein kinase N1 (PKN1), the activity of SspH1 is increased. I have also discovered that the LRR domain is needed for SspH1´s specificity in ubiquitination of the ACC domain of PKN1.

Keywords

Ubiquitin, E3-ligase, *Salmonella typhimurium*, SspH1, PKN1

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