

Abstract

Cystic fibrosis (CF) is an autosomal recessive disease affecting mainly the lungs, but also other organs including the liver, pancreas and reproductive organs. In the affected organs, there is a build-up of thick sputum called mucus. CF is caused by mutations in the *CFTR* gene, which is located on the long arm of the 7. chromosome. These mutations then lead to mutations in the encoded CFTR protein. Mutations in the CFTR protein cause defects in chloride ion transport.

One of the most common symptoms of CF is frequent lung infections caused by bacteria that multiply rapidly in the lung mucus. One of those bacteria is *Burkholderia cepacia* (BC). BC is an aerobic, gram-negative, conditionally pathogenic microorganism that poses a danger to immunocompromised people. BC and some other microorganisms have been called "hospital-acquired bacteria", It is a problem for CF patients who are often hospitalized. BC most often contain a single polar flagellum that serves to move and adhere to the surface of host cells. The flagellum, which is primarily composed of the flagellin protein, represents one of the main virulence factors of BC. The purpose of this research is to find an optimal method for isolating bacterial flagellin from *Burkholderia cepacia*. Flagellin can then serve as an immunogen for the preparation of prophylactic antibodies for CF patients.

Four procedures combining different methods of flagella release and separation by centrifugation and precipitation were proposed for flagellin isolation. The tested procedures were inspired by published methods that needed to be optimized for specific implementation.

The resulting samples and intermediates were analyzed by SDS-electrophoresis on a polyacrylamide gel. The presence of an isolated flagellin was later verified by mass spectrometry. The results reveal that the FliC flagellin could only be isolated from two bacterial strains by a method based on flagellar separation by ultracentrifugation.

Key words

Cystic fibrosis, *Burkholderia cepacia*, flagella, flagellin