Tuf of *Streptococcus pneumoniae* is a surface displayed human complement regulator binding protein.

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Abstract

Streptococcus pneumoniae is a Gram-positive bacterium, causing acute sinusitis, otitis media, and severe diseases such as pneumonia, bacteraemia, meningitis and sepsis. Here we identify elongation factor Tu (Tuf) as a new Factor H binding protein of S. pneumoniae. The surface protein PspC which also binds a series of other human immune inhibitors, was the first identified pneumococcal Factor H binding protein of S. pneumoniae. Pneumococcal Tuf, a 55 kDa pneumococcal moonlighting protein which is displayed on the surface of pneumococci, is also located in the cytoplasm and is detected in the culture supernatant. Tuf binds the human complement inhibitors Factor H, FHL-1, CFHR1 and also the proenzyme plasminogen. Factor H and FHL-1 bound to Tuf, retain their complement regulatory activities. Similarly, plasminogen bound to Tuf was accessible for the activator uPA and activated plasmin cleaved the synthetic chromogenic substrate S-2251 as well as the natural substrates fibrinogen and the complement proteins C3 and C3b. Taken together, Tuf of S. pneumoniae is a new multi-functional bacterial virulence factor that helps the pathogen in complement escape and likely also in ECM degradation.

Identifier

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