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# VIRULENCE FACTORS AND MECHANISMS OF STREPTOCOCCUS AGALACTIAE INFECTION IN TILAPIA (OREOCHROMIS SPP.): A REVIEW AND BIBLIOMETRIC ANALYSIS

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## Abstract

Tilapia, a globally significant fish in aquaculture, faces the threat of *Streptococcus agalactiae* infections, leading to severe financial losses in the aquaculture sector. This emphasizes the need for a deeper understanding of virulence factors driving pathogenicity. This bibliometric review synthesizes scientific studies on the *S. agalactiae*'s virulence factors, aiming to elucidate key genes influencing bacterial attachment and adhesion in fish hosts. Data from 115 relevant documents retrieved through Scopus database were analyzed using the VOSviewer application for keyword relationships. The results highlighted clusters related to virulence genes, infected organs, and clinical signs associated with *S. agalactiae* infections in tilapia. Capsular polysaccharides (CPs)

emerged as a crucial virulence factor, with the brain being the major infected organ. Meningitis, lesions/necrosis, and hemorrhage were identified as primary clinical signs. The proposed mechanism outlines how *S. agalactiae* utilizes virulence genes to penetrate the fish’s digestive system, evade the immune system, and cause systemic infections. In conclusion, this review emphasizes the importance of capsular polysaccharides as a key virulence factor in *S. agalactiae* infections in tilapia. Understanding the signaling response of Group B Streptococcus becomes crucial for devising effective vaccines to enhance the fish’s immune responsiveness and detect *S. agalactiae* infections more efficiently. © 2026 Penerbit UTM Press. All rights reserved.

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Bibliometric; capsular polysaccharide; Streptococcus agalactiae; virulence factor; VOSviewer

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