

Abstract

The threat of antibiotic resistance is deemed as a ticking time-bomb, yet in spite of this, the number of newly discovered antibiotics continues to steeply decline. Each year, infections caused by multi-drug resistant bacteria kill more than 4.95 million people, which demonstrates that in order to tackle this crisis, a novel approach is desperately required. The solution could be found in targeting bacterial transcriptional regulators that are responsible for the control of various virulence factors and can be highly species-specific. This also applies to the most widespread multi-drug resistant bacterium *Staphylococcus aureus*, whose virulence is intricately linked to the transcriptional regulation of the quorum sensing system. The aim of this bachelor thesis is to summarize current knowledge about clinically relevant transcriptional regulators that are associated with this system (AgrA, SarA, SarR, MgrA, Rot), with focus on their 3D structures, mechanisms of action, and inhibition.

Key words: antibiotic resistance, transcriptional regulation, quorum sensing, *Staphylococcus aureus*