



Martin Janczewski

MS-thesis: Development of an erythromycin-trypsin combination treatment for biofilm infections

Author: Martin Janczewski was born in Gdańsk, Poland on the 1st of February 1996. After immigrating to Iceland in his teens, he graduated the International Baccalaureate Diploma Programme at Menntaskólinn við Hamrahlíð in the year 2015. In the year 2018 he obtained a bachelor's degree in biomedicine, and in 2020 a bachelor's in pharmacy at the University of Iceland.



Short excerpt from the thesis: A biofilm describes a colony of bacteria forming a multicellular structure. Biofilm formation results in lowered susceptibility to antibiotics and increased difficulty of infection treatment. Trypsin derived from Atlantic cod demonstrates a high effectiveness in biofilm disruption. The objective of this study was to create a compatible formulation containing both the antibiotic erythromycin and trypsin for use as combination therapy for biofilm infections. Multiple formulations using the surfactants Span 83, Span 85, and Tween 40 were tested. Findings indicated synergistic interactions between the surfactants resulting in high levels of erythromycin solubility in trypsin containing medium. Erythromycin stability studies showed a mild decrease in erythromycin concentration over time for the created formulations stored at 25°C and 40°C, while enzyme activity tests showed an increase in the stability of trypsin's activity for formulations stored at 40°C when compared to control trypsin samples.