

TITLE: ANALYSIS OF THE EFFECT OF TEMPERATURE ON BIOFILM FORMATION AND EXPRESSION OF OLIGOPEPTIDE PERMEASE (OPP) IN *PASTEURELLA MULTOCIDA* ISOLATE FROM SWINE PNEUMONIA

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Pasteurella multocida is one of the main pathogens involved in respiratory infections of swine, generating great economic losses. *P. multocida* belongs to the family Pasteurellaceae, a gram-negative coccobacillus classified according to the capsule of polysaccharides (A, B, D, E and F) and Somatic antigens (1-16). Climatic variations, as well as ambient temperature and air humidity are major factors in the epidemiology of pasteurelloses in swine. Similarly, in children low temperature predisposes to increase in cases of otitis and oropharyngitis. These climatic factors affect biofilm formation and consequently the immune system, since the biofilm produced increases the protection and survival of the bacteria, reducing the immune response and the action of the antibiotics causing chronic and serious infections. The oligopeptide (opp) transport system encodes five genes (oppA, oppB, oppC, oppD and oppF) of proteins associated with cytoplasmic membrane, responsible for the transport of peptides and bacterial pathogenicity in during low temperature. This study aimed to evaluate the influence of temperature on the formation of biofilm and the expression of the oligopeptide permease in *P. multocida*. We selected 07 isolates of *P. multocida* from pig lungs to evaluate biofilm formation using the conventional plate count technique based on the quantification of biomass. These isolates were submitted to culture conditions at temperatures of 37°C and 25°C During 24 hours and 48 hours. There was statistically significant difference ($p < 0.05$) only in the one isolate (Pm 16759) which is a highly pathogenic strain. For the analysis of the transcripts of *oppA1*, *oppA4*, *oppB*, *oppC*, *oppD* and *oppF* only the sessile cells of the biofilm produced by this strain, was subjected to RNA extraction, cDNA synthesis and consequently to qRT-PCR. All genes were overexpressed, mainly *oppA4* in the condition 25°C for 24 hours which was 1292.70 times more expressed in relation to the other conditions, and the *oppC* were repressed in all conditions analyzed. From this study, it is concluded that the temperature influences on biofilm formation mainly in pathogenic strains and transcription of the A4 oligopeptides in *P. multocida*.

Keywords: Biofilm, *Pasteurella Multocida*, Oligopeptide permease, temperature

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