

Abstract

# Study of the Biodiversity and Antibiotic Activity of Microorganisms Isolated from the Nasal Mucosa of the Mangalica Pig<sup>†</sup>

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**Abstract:** Mammals ubiquitously interact with environmental and symbiotic microbes, and the effects of these interactions on animal physiology are currently the subject of intense interest. Symbionts of mammals are interesting from the point of view of their adaptation to their environment, including the emergence of defense mechanisms against competitors, antibiotic activity, the absence of a cytotoxic effect on host cells, competition for mucosal attachment sites and food sources. Microflora and mucous membranes closely interact, exerting a mutual influence on the health of a mammal. In this study, samples of the nasal mucosa of Mangalica pigs (a Hungarian breed of domestic pig) were studied. The samples were taken in January 2022 from the noses of one-year-old domestic pigs that had not been seriously ill or treated with antibiotics. Cultures of microorganisms were isolated on SMS agar (0.125 g/L of casein digest, 0.1 g/L of potato starch, 1 g/L of casamino acids, 15 g/L of bacto agar («HiMedia Laboratories Pvt. Ltd. Mumbai, India»)) and Mueller–Hinton agar («HiMedia Laboratories Pvt. Ltd. Mumbai, India»). The biodiversity of microorganisms and their antibiotic and antagonistic activity were studied. The resistance of the obtained cultures to the main human antibiotics was also tested. Antimicrobial activity of the isolated strains against a number of microorganisms was evaluated. The following test strains were used: a fungus (*Aspergillus niger* INA 00760), a yeast (*Candida albicans* CBS 8836), Gram-positive bacteria (*Bacillus subtilis* ATCC 6633, *Staphylococcus aureus* 29213, *Staphylococcus aureus* ATCC 25293, *Staphylococcus aureus* ATCC 43300 (MRSA), *Staphylococcus epidermidis* ATCC 14990, *Enterococcus faecalis* ATCC 29212) and Gram-negative bacteria (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853). As a result, the strain SM-11 with pronounced antimicrobial properties was selected for further investigation. The active strain was found to produce bright green fluorescent pigment.

**Keywords:** antimicrobial activity; antagonistic activity; antibiotic resistance; biodiversity; pig nose; Mangalica



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