ヒト鼻腔内共生細菌相から新規抗生物物質を発見

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近年メチシリン耐性黄色ブドウ球菌 (MRSA)などのような多剤耐性菌の出現が問題となっている。新規抗生物質の発見が望まれているが、薬剤耐性菌の出現と拡散はそれよりも非常に早い。そのため、新規薬剤探索に加え新たな資源や手法の探索も必要とされている。今回はヒトの共生微生物から薬剤耐性菌に対しても有効な新規抗菌ペプチドが単離されたという論文を紹介する。土壌微生物相のみならずヒト共生微生物相が新たな抗生物質探索源として利用できる可能性が示された。

紹介論文

Human commensals producing a novel antibiotic impair pathogen colonization
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要旨

The vast majority of systemic bacterial infections are caused by facultative, often antibiotic-resistant, pathogens colonizing human body surfaces. Nasal carriage of *Staphylococcus aureus* predisposes to invasive infection, but the mechanisms that permit or interfere with pathogen colonization are largely unknown. Whereas soil microbes are known to compete by production of antibiotics, such processes have rarely been reported for human microbiota. We show that nasal *Staphylococcus lugdunensis* strains produce lugdunin, a novel thiazolidine-containing cyclic peptide antibiotic that prohibits colonization by *S. aureus*, and a rare example of a non-ribosomally synthesized bioactive compound from human-associated bacteria. Lugdunin is bactericidal against major pathogens, effective in animal models, and not prone to causing development of resistance in *S. aureus*. Notably, human nasal colonization by *S. lugdunensis* was associated with a significantly reduced *S. aureus* carriage rate, suggesting that lugdunin or lugdunin-producing commensal bacteria could be valuable for preventing staphylococcal infections. Moreover, human microbiota should be considered as a source for new antibiotics.