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Antimicrobial activity of stable hemiaminals against *Porphyromonas gingivalis.*

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Streszczenie

Porphyromonas gingivalis is a major etiologic agent and a key pathogen responsible for the development and progression of chronic periodontitis. Controlling the number of periodontal pathogens is one of the primary actions for maintaining oral health; therefore, active compounds with a capacity to exert antimicrobial activity have received considerable attention as they may represent potential new therapeutic agents for the treatment of chronic periodontitis. Heterocyclic compounds possessing 1,2,4- or 1,2,3-triazoles are known for several biological activities, including antibacterial properties. Among them are stable hemiaminals which can be obtained in reaction between nitrobenzaldehyde derivatives and 4-amino-1,2,4-triazole or 4-amino-3,5-dimethyl-1,2,4-triazole. In this study, we selected two relatively stable hemiaminals: (2,4-dinitrophenyl)(4H-1,2,4-triazole-4-ylamino)methanol (24DNTAM) and (2,4-dinitrophenyl)(4H-3,5-dimethyl-1,2,4-triazole-4-ylamino)methanol (24DNDMTAM). Both compounds showed promising anti-P. gingivalis activity, higher against ATCC 33277 strain as compared to A7436 strain. The lowest hemiaminal concentration inhibiting visible planktonic bacterial growth under high-iron/heme conditions was ~0.06 mg/ml, and the lowest hemiaminal concentration showing killing of bacteria was ~0.25 mg/ml. Antimicrobial activity was also observed against P. gingivalis grown on blood agar plates. Slightly higher antimicrobial activity of both compounds was observed when P. gingivalis was grown in co-cultures with epithelial HeLa cells under low-iron/heme conditions, which mimic those occurring in vivo. 24DNTAM was more effective against P. gingivalis, but exhibited higher cytotoxic activity against epithelial and red blood cells, as compared with 24DNDMTAM. We conclude that both hemiaminals might originate a novel group of biologically important molecules

Słowa kluczowe

Porphyromonas gingivalis, Hemiaminal, Antimicrobial activity

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