

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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