**In vitro effect of deferoxamine on the efficiency of metronidazole against Capnocytophaga spp.**

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**Background:** For successful proliferation in multicellular organisms, microbial pathogens must possess ability to acquire growth-essential iron from their hosts. Deferoxamine (DFO), a FDA-approved iron chelator, has been extensively used for parenteral chelation therapy in iron-overloaded states, especially during thalassemia. *Capnocytophaga* spp. are normal anaerobic inhabitants of the oropharyngeal flora, but may be involved in periodontal and systemic diseases. Metronidazole, a 5-nitroimidazole, has been regarded as an important therapeutic agent in the treatment of anaerobic infections. Recent data show an emergence of resistance in *Capnocytophaga* spp. against antimicrobial agents, including metronidazole. The aim of this study was to investigate whether the exposure to DFO may increase susceptibility of *Capnocytophaga* spp. to metronidazole.

**Material/methods:** *Capnocytophaga* cells (OD₆₀₀nm=0.1) were primary incubated in serial dilutions of DFO (0–0.24 mM) in brain heart infusion broth enriched with yeast extract (0.5%), hemin (5 µg mL⁻¹) and vitamin K₁ (1 µg mL⁻¹) (BHIe). Cells viability was determined by OD₆₀₀nm measurement in anaerobic conditions at 37°C after 24h. Threefold serial dilutions of metronidazole (128, 256, 512 mg L⁻¹) were prepared in BHIe, with or without 0.24mM DFO. *Capnocytophaga* cells inoculated (10⁷ cells mL⁻¹) into the media were enumerated after 24h in anaerobic condition at 37 °C.

**Results:** The viability of three metronidazole resistant *Capnocytophaga* strains (C. sputigena, C. gingivalis and C. leadbetteri with MICs > 128mgL⁻¹) was not affected by 0.24 mM DFO. The effect of 0.24mM DFO on the efficiency of metronidazole was evaluated on these strains. Antibacterial properties of three concentrations of metronidazole tested (128, 256, 512 mg L⁻¹) against *Capnocytophaga* increased in the presence of DFO, as shown by survival curves in absence and presence of DFO.

**Conclusions:** Further investigations are required to better understand the mechanisms of action of DFO and other iron chelators. Their use could be an adjunctive therapeutic agent against periodontal disease.

**Fig.1.** Cell number of *Capnocytophaga* spp. exposed to metronidazole (128, 256 and 512 mgL⁻¹) for 24h, in the presence or absence of DFO (0.24mM).