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Arthrospira Platensis*'s (Spirulina) Antimicrobial Effect on *Treponema Denticola

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Objectives Periodontitis, a prevalent chronic inflammatory disease affecting the supporting structures of the teeth, imposes significant burdens on global oral health. Conventional therapies often fall short in addressing the multifaceted nature of periodontal pathogenesis. Recently, there has been burgeoning interest in exploring alternative and adjunctive treatments derived from natural sources. *Arthrospira platensis* (Spirulina), a cyanobacterium renowned for its rich nutritional profile and diverse bioactive compounds, has emerged as a promising candidate in periodontal therapy. We focused on evaluating the antimicrobial effect of Spirulina against *Treponema dentincola*, a pathogenic oral anaerobic and a member of the red complex of oral bacteria.

Methods *Treponema denticola* ATCC 35405 was cultured in OTEB media at 37°C in an anaerobic chamber. Periodontal ligament (PDL) cells were cultured in MEM-α media at 37°C.*Treponema denticola* was treated with Spirulina up to 300µg/ml.for 24h and their Optical Dentisy (OD) was measured at 600nm. PDL cells were treated with the same concentrations of Spirulina for 24h and their proliferation was assessed by the CyQuant Assay.

Results Data demonstrated a non-toxic effects of Spirulina in PDL cells proliferation up to a concentration of 300µg/ml, while a dose-dependent significant decrease was found for *Treponema denticola* OD from 100 - 300µg/ml of Spirulina.

Conclusions Spirulina significantly reduces Treponema denticola without impacting periodontal ligament cells. Therefore, these findings along with Spirulina'a multifaceted pharmacological properties and favourable s profile suggest that Spirulina may be a promising adjunctive therapy in the management of periodontitis. With continued investigation and strategic integration, Spirulina holds the potential to complement existing periodontal treatments and enhance outcomes for patients worldwide.