ALGAE FOR ORAL ECOSYSTEM HEALTH

Translational Evidence for Spirulina in Periodontal and Malodor-Related Conditions

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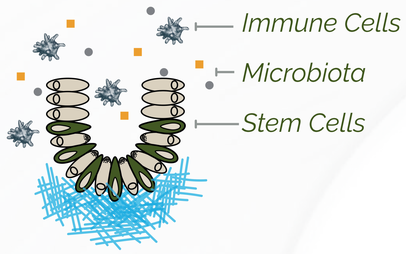
PROBLEM

Oral disease reflects a dysregulated cellular microenvironment

- Dysbiosis
- Inflammation
- Barrier dysfunction



INTERVENTION

Spirulina (*Arthrospira platensis*) as a multi-functional ecologic input

- ✓ Rich in bioactive compounds
- ✓ Antimicrobial, anti-inflammatory
- ✓ Supports epithelial repair

Key References

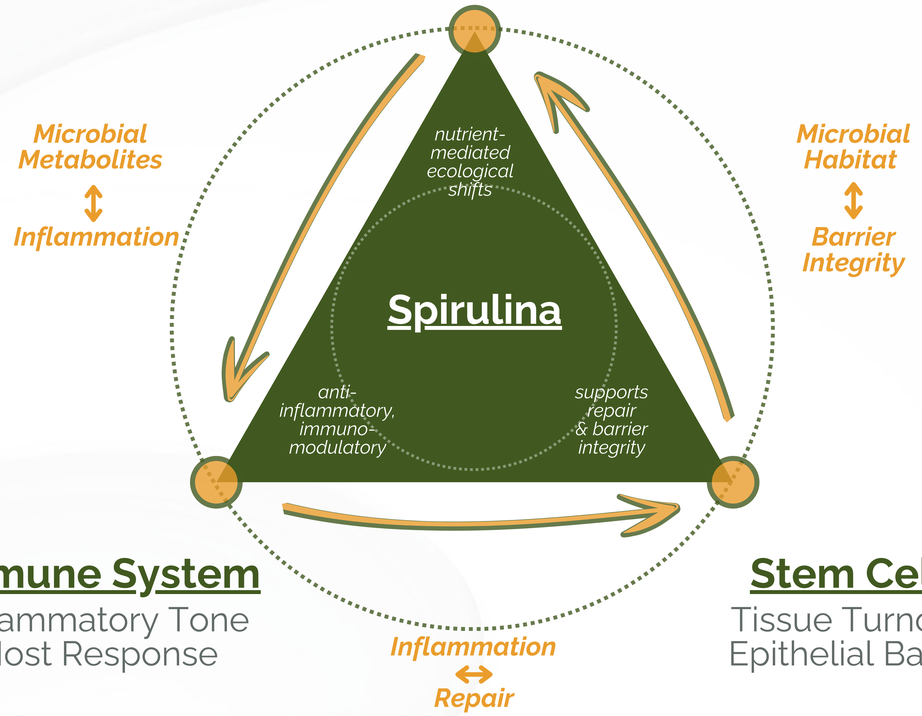
Ilieva et al., *Int J Mol Sci* **(2024)**
Antimicrobial Activity of Spirulina

Wu et al., *Arch Toxicol.* **(2016)**
Immunomodulatory Activity of Spirulina

Masson, *Ann Otolaryngol.* **(1951)**
Chlorophyll A in the Treatment of Halitosis

MODEL OF ORAL HEALTH AS A DYNAMIC ECOSYSTEM

Microbiome
Metabolic Activity
Community Balance



Immune System
Inflammatory Tone
Host Response

Stem Cells
Tissue Turnover
Epithelial Barrier

Oral health emerges from dynamic interactions between microbial, immune, and epithelial microenvironments

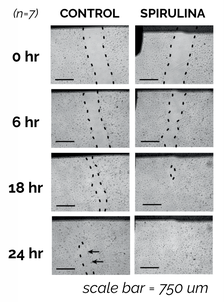
CONCLUSION

Spirulina supports oral ecosystem stability across microbial, immune, and epithelial layers.

These findings motivate controlled clinical studies integrating microbiome, periodontal, and metabolomic outcomes.

SUPPORTING DATA

1. Accelerated Epithelial Repair (In Vitro)



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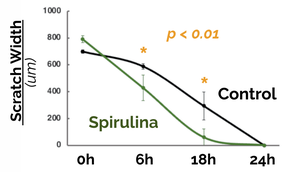
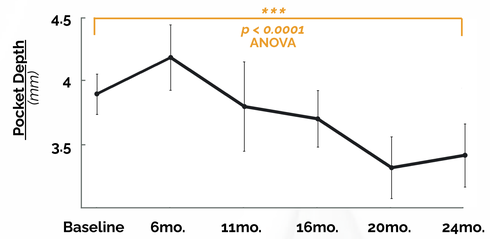
Scratch assay in epithelial cells demonstrating faster wound closure following treatment with spirulina.

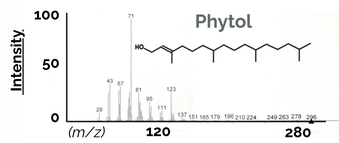


2. Longitudinal Reduction in Periodontal Pocket Depth

Periochart data from a 2-year longitudinal single-blinded case study (n=1), indicating a reduction in periodontal pocket depth following exclusive use of a spirulina tooth powder for daily oral care.



3. Mechanistic Basis for Malodor Modulation



GCMS chromatogram identifying phytol in spirulina, supporting a plausible chemical basis for malodor reduction

Acknowledgements:

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