



Water-Soluble Rice Silica: A Natural Ally for Oral Health

Faraed D Salman*

Professor in Dental Assistant Department/Medical Technical Institute, Erbil, Polytechnic University, Erbil, Iraq

*Corresponding Author: Faraed D Salman, Professor in Dental Assistant Department/Medical Technical Institute, Erbil, Polytechnic University, Erbil, Iraq.

Received: November 18, 2024

Published: December 01, 2024

© All rights are reserved by **Faraed D Salman.**

Water-soluble rice silica, derived from rice husks, has gained attention for its significant contributions to oral and dental health. Known for its natural origin and biocompatibility, this bioavailable form of silica plays an essential role in maintaining the structural health of teeth and gums.

Key benefits of water-soluble rice silica

Strengthening tooth enamel

Tooth enamel, the primary defense against cavities and erosion, benefits greatly from silica. Water-soluble silica reinforces this protective layer, enhancing enamel resilience and reducing its susceptibility to damage, thereby promoting overall oral hygiene [1].

Supporting gum health

Silica's involvement in collagen synthesis makes it indispensable for gum health. Collagen, a critical protein for gum structure, ensures the stability of teeth and protects against periodontal diseases. Water-soluble rice silica contributes to collagen production, fostering firm and healthy gums [2].

Combating plaque and promoting hygiene

As a gentle abrasive, silica is a key ingredient in many toothpastes. Its ability to effectively remove plaque and surface stains while maintaining low Relative Dentin Abrasivity (RDA) levels ensures enamel safety during use [3].

Additional oral health benefits

Silica-infused dental products, such as mouthwashes and toothpaste, offer antimicrobial properties that reduce harmful oral bacteria. This action decreases the risk of dental caries and enhances overall oral hygiene [4].

Beyond oral health: Systemic benefits

Beyond its dental benefits, dietary silica supports connective tissue health, benefiting bones, skin, and joints. Plant-based silica, particularly in its nanoparticle form, improves bioavailability, enabling more effective absorption and collagen production. Additionally, silica aids in detoxification by reducing heavy metal absorption and mitigating toxin-induced inflammation [5,6].

Innovation in silica-based products

One notable example of advanced silica applications is LABO Nutrition's bioactive silica, which incorporates rice-derived silica with vitamins D3 and K2. This combination enhances bone density and elasticity by stimulating collagen synthesis. Improved collagen production also supports periodontal health by strengthening gum tissues, contributing indirectly to dental stability. The dual action of enhancing collagen and boosting calcium absorption underscores its holistic approach to oral health [7].

Conclusion

Water-soluble rice silica represents a natural, biocompatible solution to many oral health challenges. By fortifying enamel,

improving gum health, and reducing plaque, it supports a comprehensive approach to dental hygiene. Furthermore, its broader health benefits, including tissue regeneration and detoxification, position silica as a versatile component in health and wellness. Continued exploration of its applications promises to unveil further potential in promoting both oral and systemic health.

Bibliography

1. Sopan S., *et al.* "Utilization of silica nanoparticles from rice husks for improving the mechanical properties of dental materials: A literature review". *Bioscientia Medicina* 6.14 (2022).
2. Aprillia I., *et al.* "Efficacy of rice husk nanosilica as a caries treatment (dentin hydroxyapatite and antimicrobial analysis)". *European Journal of Dentistry* (2022).
3. Luo S. "Method and use of making toothpaste or tooth powder grinding agent by rice husk ash". (2004).
4. Neal A., *et al.* "Biogenic silica from silica-containing plant material such as rice hulls". (2007).
5. Tedesco E., *et al.* "In vitro evaluation of different organic matrices used to modulate silicon bioavailability". *The FASEB Journal* (2020).
6. Rodella L F, *et al.* "A review of the effects of dietary silicon intake on bone homeostasis and regeneration". *Journal of Nutrition, Health and Aging* 18.9 (2014): 820-826.
7. Goyal H. "Soluble silica as a boon for alleviating toxic effects of heavy metals on *Vigna radiata* grown hydroponically in sewage". *International Journal of Agricultural Science and Research* (2017).