Research Highlights

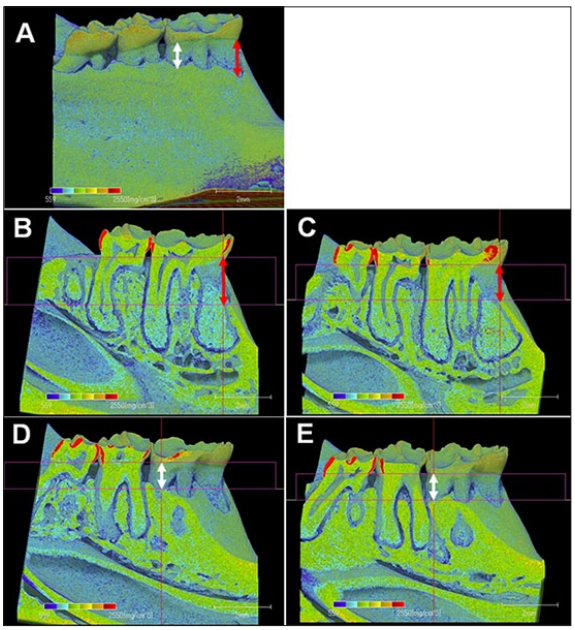
Anti-aging properties of drinking hydrogen-rich water on periodontal tissues

Oxidative stress is involved in age-related inflammatory reactions. Molecular hydrogen is considered to be a novel antioxidant that can reduce oxidative stress. Therefore, drinking hydrogen-rich water may suppress age-related oxidative stress and inflammatory reactions in the periodontal tissues.

However, it remains unclear what the effects drinking hydrogen-rich water would be over the course of a lifetime.

Takaaki Tomofuji and colleagues at Okayama University have shown the anti-aging effects of drinking hydrogen-rich water on periodontal tissues.

Four-month-old male Fischer 344 rats (n=12) were divided into two groups: the experimental group (hydrogen-rich water intake) and the control group (distilled water intake). The rats consumed hydrogen-rich water or distilled water until they reached 16 months in age.



The 3D image model of the mandibular regions in rats (A). In the mesial root regions, the level of alveolar bone loss (white arrows) was greater in the control group (B) than in the experimental group (C). In the distal root regions (red arrows), the level of alveolar bone loss in the control group (D) was similar with that in the experimental group (E).

At 16 months, the periodontal levels of oxidative stress were higher in the control group compared with the baseline level ($p < 0.05$), and lower in the experimental group than in the control group ($p < 0.05$). The values of the linear distance between the cemento-enamel junction and alveolar bone crest were significantly lower in the experimental group than in the control group at the mesial root regions ($p < 0.05$). Although protein expression of interleukin-1β did not differ, gene expression of Nod-like receptor protein 3 inflammasomes was activated in periodontal tissues from the experimental group as compared with the control group.

These findings indicate that drinking hydrogen-rich water could suppress oxidative stress, but did not affect inflammatory reactions in aging periodontal tissues.

Reference:

- Authors: Tomofuji T, Kawabata Y, Kasuyama K, Endo Y, Yoneda T, Yamane M, Azuma T, Ekuni D, and Morita M.
- Title of original paper: Effects of hydrogen-rich water on aging periodontal tissues in rats.
- Journal, volume, pages and year: *Scientific Reports* **4**, 5534 (2014).
- Journal website: http://ousar.lib.okayama-u.ac.jp/metadata/52810
- Digital Object Identifier (DOI): 10.1038/srep05534
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