

The Comparison of Chromium Ions Release Stainless Steel 18-8 between Artificial Saliva and Black Tea Leaves Extracts

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Abstract : The use of stainless steel wires in the field of dentistry is widely used, especially for orthodontic and prosthodontic treatment using stainless steel wire. The oral cavity is the ideal environment for corrosion, which can be caused by saliva. Prevention of corrosion on stainless steel wires can be done by using an organic or non-organic corrosion inhibitor. One of the organic inhibitors that can be used to prevent corrosion is black tea leaves extracts. To explain the comparison of chromium ions release for stainless steel between artificial saliva and black tea leaves extracts. In this research we used artificial saliva, black tea leaves extracts, stainless steel wire and using Atomic Absorption Spectrophotometric testing machine. The samples were soaked for 1, 3, 7 and 14 days in the artificial saliva and black tea leaves extracts. The results showed the difference of chromium ion release soaked in artificial saliva and black tea leaves extracts on days 1, 3, 7 and 14. Statistically, calculation with independent T-test with $p < 0,05$ showed a significant difference. The longer the duration of days, the more ion chromium were released. The conclusion of this study shows that black tea leaves extracts can inhibit the corrosion rate of stainless steel wires.

Keywords : chromium ion, stainless steel, artificial saliva, black tea leaves extracts

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