Study of Fulvic Acid: A Natural Dietary Supplement

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Shilajit is a substance found in parts of Asia. Although there have been no clinical studies, it is used by the locals and is marketed because it is thought to have antiseptic, anti-inflammatory and pain suppressing effects. Fulvic acid (F-A) is a major constituent of shilajit and was used in the analysis of the anti-pathogenic tendencies of shilajit and cytotoxic effects on human cells of the oral cavity.
The bacterial study was performed on *Streptococcus mutans*, a normal flora of the oral cavity. The idea was to test the metabolic activity of the bacteria in F-A-containing media. Menadione-XTT reagent was used for this. The bacterial biofilm was allowed to grow in TSBS in a microtiter plate of 96 wells. The F-A solution of different concentration were introduced into each well in a gradually decreasing amount and the last control wells had a zero concentration. The XTT reagent was introduced and after incubation the biofilm of *S. mutans* reduced the XTT to an orange color, the change in color was detected by measuring the absorbance at 490nm. Between 2.5% to 5.0% of F-A the wells showed signs of decreased activity. The numbers indicated that absorbance of the wells with concentrated F-A was lower compared to the wells with more diluted F-A solutions. From this it can be concluded that F-A had a negative effect on the growth and metabolic activity of *S. mutans*. For human testing, pulp and fibroblast cells were subjected to different concentrations of F-A. The cytotoxicity was measured by the amount of Lactate Dehydrogenase released from the treated cells (sign of damage). Overall, the experiment validates the potency of F.A as an effective antibacterial. Further testing is needed but the compound shows promise and can be employed as an effective ingredient of mouthwash and other such antiseptic products.

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