Influence of vinegar on biofilms formation *in situ*

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Objectives:
The study was intended to elucidate the efficacy of commercially available vinegar on *in situ* pellicle formation and biofilms.
Methods:
In situ biofilm formation was carried out over 3 min and 24 h on bovine enamel slabs mounted in individual splints for 3min and 24h. After rinsing with vinegar, all the samples were analyzed via *Bac*Light™ viability assay, SEM and TEM. The samples with only water rinsing served as control groups.
Results:
In part one, vinegar rinsing reduced the outer globular layer of the pellicle and resulted in formation of a network-like subsurface pellicle. In part two, vinegar caused a significant reduction in bacterial viability and disruption of the mature biofilm. After vinegar rinsing, total bacteria amount of saliva samples decreased remarkably within 30 min, and bacterial viability reduced even 120 min in both biofilm and saliva.
Conclusion:
This *in situ* study reveals that rinsing with vinegar for 5 s alters the pellicle layer resulting in subsurface pellicle formation. Furthermore, vinegar rinsing will destruct mature (24-h) biofilms, and significantly reduces the viability of planktonic microbes in saliva, thereby decreasing biofilm formation.