

ABSTRACT

Ammonia is one of saliva organic components which can increase the pH of whole-resting saliva. This pH condition leads to supragingival calculus formation. Previous studies on supragingival calculus formation focused separately and only on the determination of its direct cause and the cause of whole-resting saliva pH increase. These previous studies shown that whole-resting saliva played an important role. However, mechanism due to ammonia role has not been known yet. Thus such study resulted in lack of description on supragingival calculus formation. Therefore, a study on integrated mechanism of has been carried out on complete mechanism of supragingival calculus formation *in vivo* was carried out.

This study was conducted by using a longitudinal-analytical observation method. Population was patients of SDAU Periodontics clinic, with and without dental calculus, aged between 18 and 25. Simple Random Sampling was taken. Unit of analysis which consisted of 35 whole-resting saliva samples was taken at 09:00 a.m. after fasting. It observed concentration of ammonia, bicarbonate, total calcium, total phosphate, total lipid and pH. Determination of supragingival calculus formation was observed at the beginning of the study (after their calculus cleansing), after 4, 8 and 18 weeks.

Regression Analysis showed that ammonia was the main contributor to whole-resting saliva pH, whereas whole-resting saliva pH was the main contributor to supragingival calculus formation. Path analysis confirmed that ammonia was the trigger of supragingival calculus formation through its contribution to whole-resting saliva pH.

The proven hypothesis of this study pointed out that, in the concept of supragingival calculus formation, there was a difference between concept proven *in vitro* and the new one proven *in vivo*. This study has found a new theoretical concept in supragingival calculus formation *in vivo*.

Key words: Supragingival calculus – Whole-resting saliva

