Anaheim, Calif.
13-17 May 1990

ABSTRACTS

of the

90th Annual Meeting

of the

American Society for Microbiology

1990

E-86 Passive Immunization with Hen Egg Yolk Antibodies to *Streptococcus mutans* Protein Antigens in Rats.

T. MINAMI*, T. HORIKOSHI, J. HIRAOKA, T. OOSHIMA, and S. HAMADA. Osaka Univ. Faculty Dent., Suita-Osaka, and Kanebo. Ltd., Odawara, Japan.

Several facets of the existence of *S. mutans* which may serve some function in caries development have been reported. In this study, the effect of the hen egg yolk antibodies (yAbs) to the purified cell-free (CF) and cell-associated (CA) glucosyltransferases (GTases), and 190K protein antigen (PAc) of a strain of serotype *c S. mutans* was studied in in vitro and in vivo.

Hens (18 weeks old) were immunized with the purified protein antigens of strain Ingbritt and Freund complete adjuvant, and yAbs were purified by ammonium sulfate precipitation and DEAE-Sephacel column chromatography. Each yAb isolated produced a specific precipitin band against the homologous antigen. Anti-PAc developed a cellular aggregation, while anti-CA-GTase and CF-GTase strongly inhibited water-insoluble and -soluble glucan synthesis by CA-GTase and CF-GTase from sucrose, respectively. Further, all these yAbs suppressed the adherence to the glass surface of growing cells of *S. mutans* MT8148R (serotype *c*).

Rats infected with *S. mutans* MT8148R and fed diet 2000 containing 56% sucrose induced severe dental caries, while rats administered the yAbs to CA-GTase or PAc in the diet resulted in statistically significant decreases in caries development, as compared with that of control rats. Administration of the yAb to CF-GTase failed to protect against caries.

These results suggest that CA-GTase and PAc are important cellular components for *S. mutans* to develop dental caries in rats.