

**Oral Passive Immunization against Dental Caries in Rats by Hen Egg Yolk Antibodies Specific for Cell-Associated Glucosyltransferase of *Streptococcus mutans***

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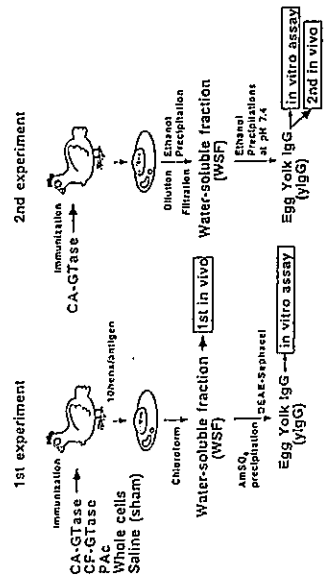
**Virulence Factors of *Streptococcus mutans***

Adherence ability to the tooth surface

- 1) Sucrose-independent adherence through surface proteins  
→ Initial attachment of *S. mutans*
- 2) Sucrose-dependent adherence\*  
→ Firm, irreversible adherence  
\* Combined action of CA-GTase and CF-GTase using sucrose

Acid production from various sugars

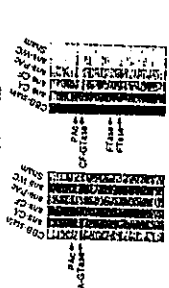
**Preparation of Egg Yolk IgG (yIgG)**



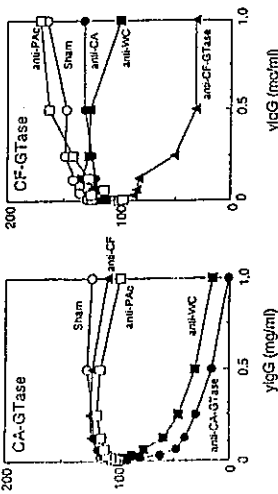
ELISA of Various Antigen of *S. mutans* MT8148 with yIgG to the *S. mutans* Antigen

yIgG to	ELISA-antigen (OD)	
	CA-GTase	CF-GTase
CA-GTase	7.55	0.32
CF-GTase	0.20	2.79
Whole cells	0.59	4.97
PAC	0.59	4.97
Sham-immunized	-0.35	-0.35

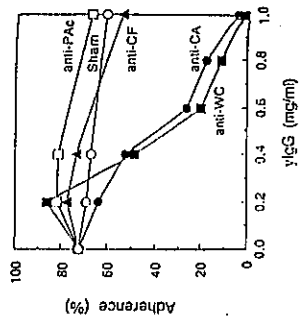
(A) Nonreducing Gel (w/vol: 2.4%)



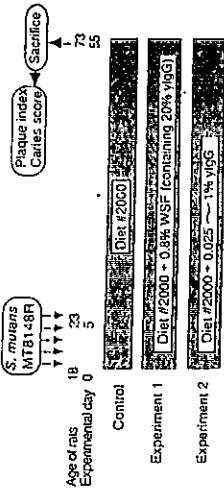
Western Blotting of yIgG against Various Antigens from *S. mutans* MT8148



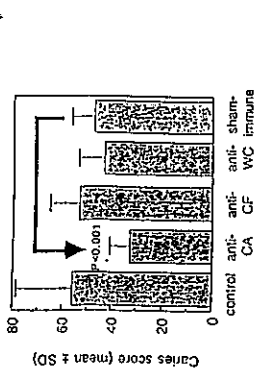
**Inhibitory Effects of yIgG on Glucan Synthesis by CA-GTase or CF-GTase of *S. mutans* MT8148**



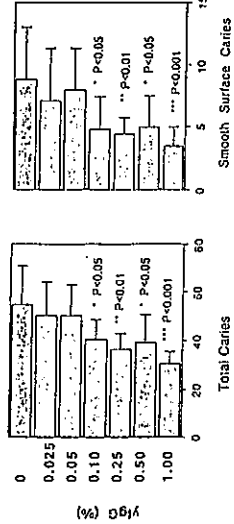
Inhibitory Effects of yIgG on Sucrose-Dependent Adherence of *S. mutans* MT8148



**Experimental Design for Examining The Anti-Caricogenicity of Egg Yolk IgG in SPF Sprague-Dawley Rats**



Passive Oral Immunization of Rat Dental Caries with yIgG WSF (0.3%) Specific for Antigen from *S. mutans* MT8148



**Inhibition of Dental Caries Development by yIgG Specific for CA-GTase in *S. mutans*-Infected Rats**

**要約**

- \* 抗CA-GTase抗体は、in vitroにおいてCA-GTaseの活性を阻害し、*S. mutans*のスクロース依存性の酸産生への付着を抑制した。
- \* ラットに in vivo における抗CA-GTase抗体の付着抑制作用には、トースレスポンズが観察され、0.1%以上の配合量で顕著に抑制効果を示した。
- \* CA-GTaseは、*S. mutans*による歯の発育において重要な因子と考えられる。
- \* 抗CA-GTase抗体による口腔免疫は、幼体の予防に有効な手段である。

Minimum Agglutinating Concentration (MAC) of yIgG against Whole Cells of *S. mutans* MT8148

yIgG to	<i>S. mutans</i> MT8148	
	MAC (μg/ml)	BTLS (μg/ml)
CA-GTase	1.00	1.00
CF-GTase	N/A	N/A
Whole cells	0.125	0.50
PAC	0.125	0.50
Sham-immune	N/A	N/A

\* Not agglutinated by yIgG tested up to a concentration of 2.0 mg/ml reaction mixture.