

Title:

Gluma Antimicrobial Effect on Five Strains of Cariogenic Bacteria

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Abstract:

AIM: Gluma desensitizer is one of many topical agents used to prevent post-operative hypersensitivity. This project aims to see if Gluma could have an additional antimicrobial effect on five strains of common bacteria associated with caries by assessing the zone of inhibition.

METHODS: Three experiments were conducted with prepared plates with strains of *Streptococcus mutans* (ATCC 25175), *Porphyomonas gingivalis* (BAA-308), *Porphyomonas gingivalis* (ATCC 33277), *Lactobacillus rhamnosus* GG (ATC 53103), *Lactococcus lactis* (CMB8)]: Gluma pipetted directly onto plates, impregnating Whatman and Fisher filter paper discs with Gluma then placed on plates, and filling 1 μ l and 0.5 μ l Gluma into wells punched out using tips of micropipette tip and a Pasteur pipette tip. Plates were packaged in pouches and incubated anaerobically for at least forty-eight hours then retrieved and zones of inhibitions were assessed and measured. Statistics was not done because the study's aim was to verify the presence or absence of the zones of inhibition.

RESULTS:

Strains	Zones of Inhibition (mm) for Gluma pipetted onto plate			
S. Mutans	10	11	12	13
CMB8	9	11	12	12
Lactobacillus rhamnosus GG (LGG)	8	10	10	11
Porphyomonas gingivalis (PG) W83	12	13	14	16
Porphyomonas gingivalis (PG) 33277	5	5	6	10

All five strains demonstrated susceptibility by the zones of inhibition with clear borders of antimicrobial capability up to a certain point where the Gluma could not diffuse out. Results were listed from smallest to largest values.

Strains	Zones of inhibition (mm) for Fischer filter paper				
S. Mutans	9	10	10	10	11
CMB8	8	9	9	10	10
LGG	7	9	9	10	11
PG W83	9	9	10	10	11
PG 33277	9	9	10	10	12

Strains	Zones of inhibition (mm) for Whatman filter paper				
S. Mutans	8	9	10	10	10
CMB8	5*	10	10	11	13
LGG	7	9	9	9	10
PG W83	5*	9	9	10	10
PG 33277	9	10	12	12	14

All discs but two, notified with the asterisk, demonstrated clear inhibition zones. Fischer filter paper discs created zones of similar diameters, whereas Whatman discs had a larger range. Prepared wells filled with Gluma.

Species	Micropipette tip well + 1 μ l	Micropipette tip well + 0.5 μ l	Pasteur tip well + 1 μ l	Pasteur tip well + 0.5 μ l
CMB8	19	20	13	16
LGG	15	15	9	10
S. Mutans	15	17	9	10

Plates yielded results with distinct borders only for three species. Zones were bigger for the wells created by the micropipette than the Pasteur pipette.

CONCLUSIONS:

From the results of all three experiences, Gluma demonstrated an antimicrobial effect on the bacteria tested regardless of how the desensitizer was used. Based on the promising results, clinician could consider Gluma for the preparations of those patients susceptible to caries in addition to using it only as a desensitizer.