

The Effect of Xenografts on Ceramic Implant Surface Wettability

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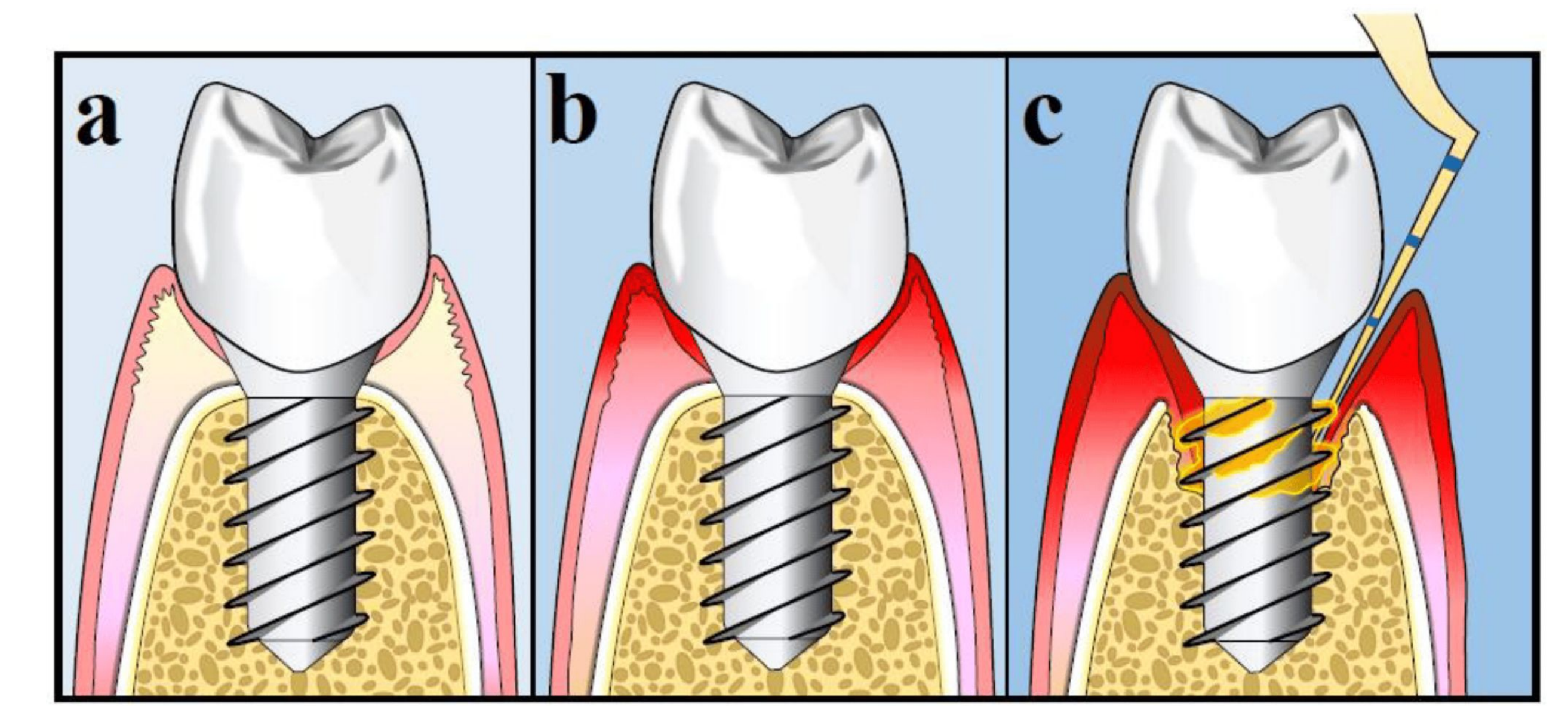
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****There are no conflicts of interest in the present study**

Background

- Peri-implantitis is a significant challenge in implant dentistry, jeopardizing the longevity and success of dental implants for patients.
- Enhanced wettability (hydrophilicity) of dental implant surfaces shows promise in positively influencing osseointegration and biological response (Rupp, 2014)
- Bone grafting in peri-implantitis defects may yield improved clinical outcomes when utilizing implants with enhanced wettability (Gittens, 2014)
- Treatment of peri-implantitis typically involves surgical procedures, starting with decontamination of the affected site followed by bone grafting (Smeets, 2014)
- Outcomes following bone grafting vary (Claffey, 2008)



Objective

The objective of this in-vitro study was to examine the effect of various bone grafts mixed with different mediums on ceramic implant surfaces wettability.

Claffey, Noel, et al. "Surgical treatment of peri-implantitis." *Journal of clinical periodontology* 35 (2008): 316-332.

Gittens, Rolando A., et al. "A review on the wettability of dental implant surfaces II: Biological and clinical aspects." *Acta biomaterialia* 10.7 (2014): 2907-2918.

Smeets, Ralf, et al. "Definition, etiology, prevention and treatment of peri-implantitis—a review." *Head & face medicine* 10.1 (2014): 1-13.

Rupp, Frank, et al. "A review on the wettability of dental implant surfaces I: theoretical and experimental aspects." *Acta biomaterialia* 10.7 (2014): 2894-2906.

Materials and Methods

Surfaces:

- SDS[®]
- Patent[™]
- Zeramex[®]

Xenografts:

- Bio-Oss[®]
- Wishbone[™]

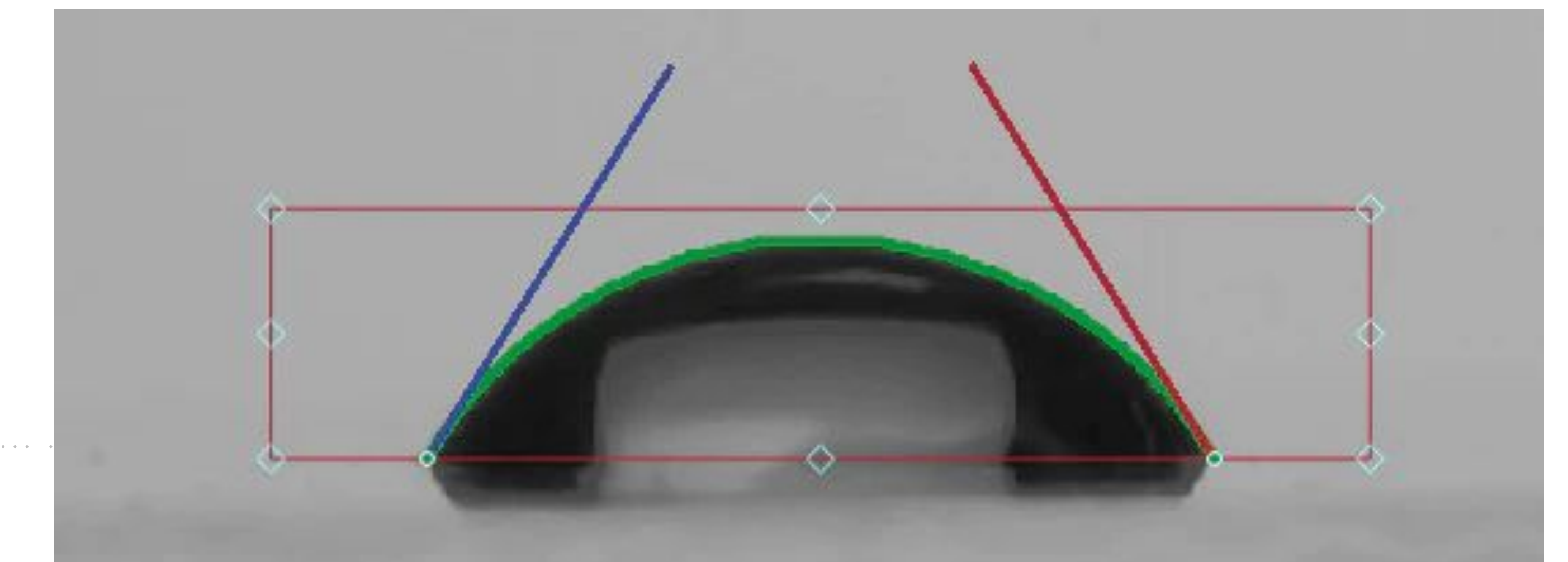
Liquids:

- Sterile saline
- BSA

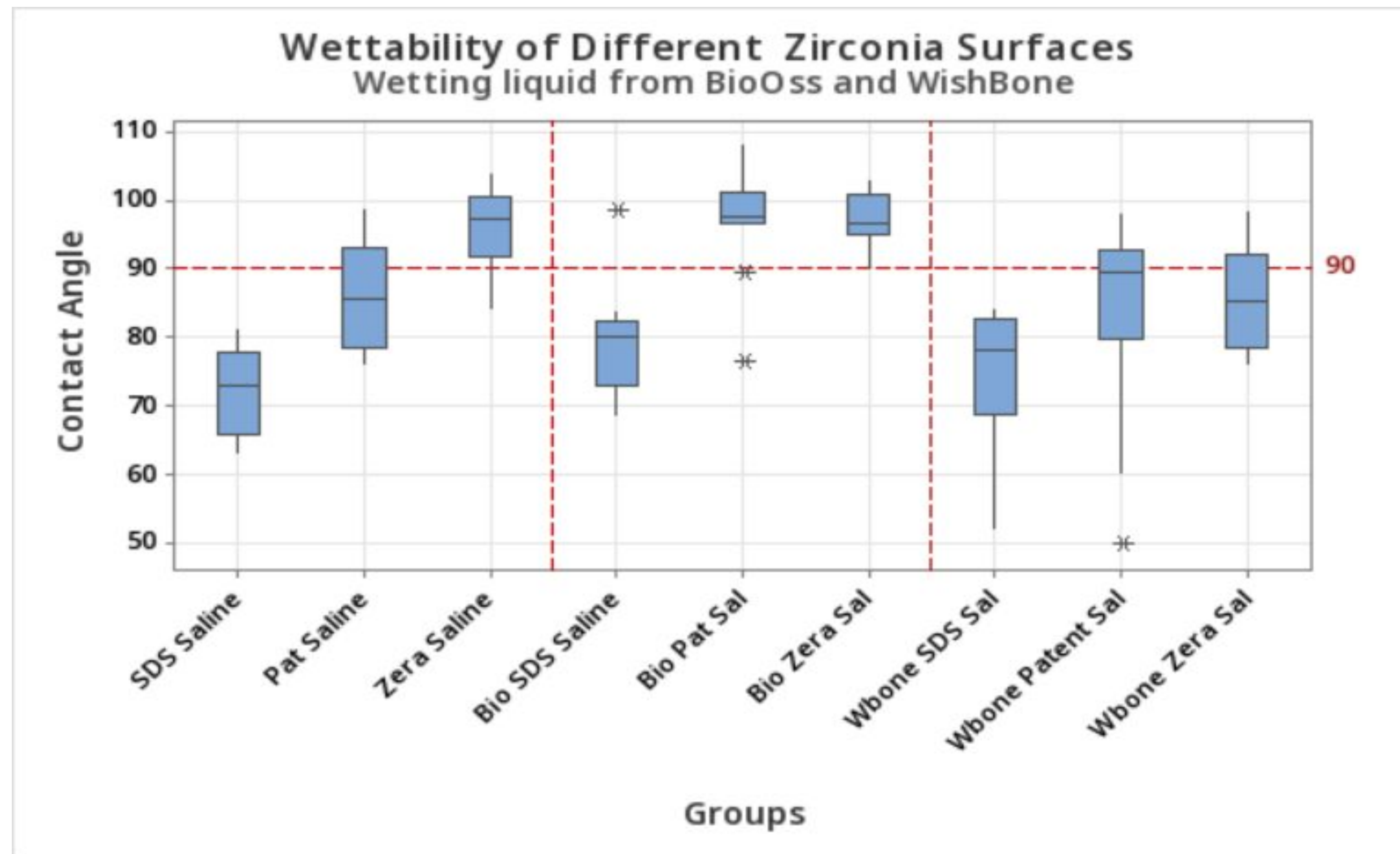
Statistical analysis completed using one-way analysis with variance test (ANOVA)



- **Ossila goniometer**, n=15 each group
- 7.5 μ l drops of control and supernatant were dispensed using a calibrated microsyringe



Results



	Control	Bio-Oss®	Wishbone™
SDS®/Saline	72.21±2.37	78.72±1.96	75.05±2.37
SDS®/BSA	69.60±1.74	81.44±1.45	72.19±1.74
Patent™/Saline	85.94±3.48	97.42±1.84	83.52±3.48
Patent™/BSA	72.48±2.61	93.15±1.51	64.18±2.61
Zeramex®/Saline	96.28±1.92	97.33±0.94	86.07±1.92
Zeramex®/BSA	83.94±1.45	76.32±1.23	90.43±1.45

All surface contact angle comparisons were statistically significant ($p < 0.05$) except SDS® and Patent™ with BSA, Zeremex® and Patent with Bio-Oss® and saline, SDS® and Patent™ with Wishbone™ and saline, and Zeremex® with Wishbone™ and saline.

Conclusion

- **SDS[®]** demonstrates the highest surface **hydrophilicity**.
- **Zeramex[®]** demonstrates the highest surface **hydrophobicity**.
- Within the limitations of the study, mixing Wishbone[™] with saline and BSA may make the ceramic surfaces **more hydrophilic**.
- Bio-Oss[®] when mixed with the liquids may generally make the surfaces **more hydrophobic**.