



acqua®

# SURFACE CONCEPT EVOLUTION



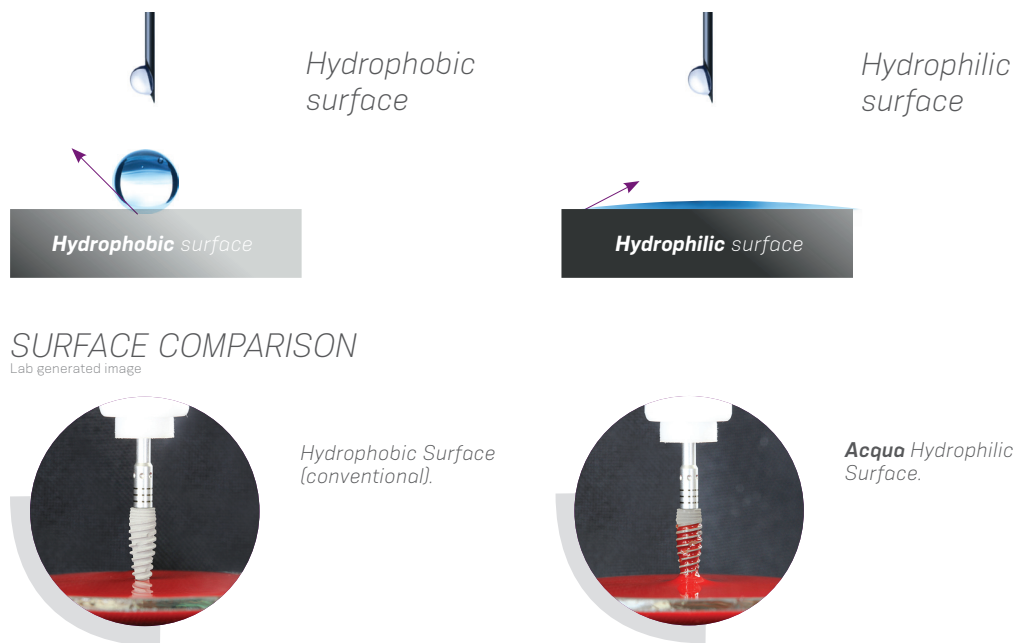
 **NEODENT®**  
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# THE **TECHNOLOGY** DEVELOPED TO FACILITATE YOUR WORK.

Like you, we live to give people new reasons to smile. To achieve this goal, we are always investing in research and innovation.

## Acqua: an innovative surface

Wettability is an important component to the accessibility of an implant with the body.<sup>1,2</sup> The wettability characteristic is assessed by the contact angle of a drop of liquid on the surface of the implant. If you compare hydrophobic and hydrophilic surfaces, a differentiated cascade of initial interfacial stresses is expected.



## Acqua: reliability and confidence in your hands

The quality and confidence of Neodent implant designs, now featuring the Acqua surface. Acqua implants feature both a hydrophilic surface and microtopography is designed to increase wettability.

Recommended  
uses for **Acqua**  
surface implants



DRIVE™



HELIX™



TITAMAX™

Type III & IV bone



Post-extraction



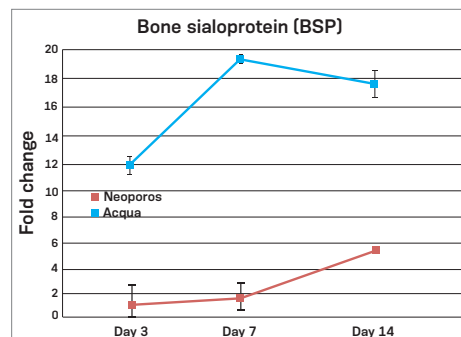
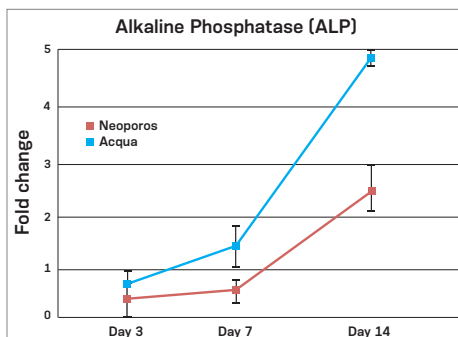
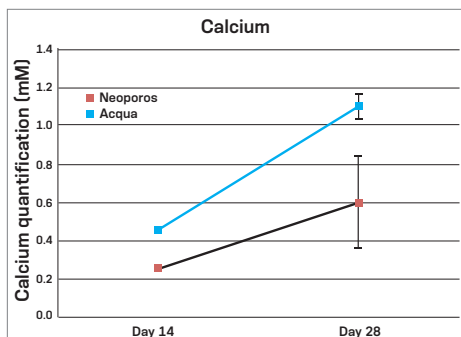
Grafted areas



# NEODENT® ACQUA SCIENTIFIC DATA



Acqua surface was able to better induce the differentiation of hMSCs into osteoblasts compared to the Neoporos surface - **Acqua induces cell differentiation**



## Material & Methods:

- Commercially pure grade IV titanium disks
- Cell culture: Human Mesenchymal Stem Cells (hMSCs)
  - Cell viability and proliferation
  - Alkaline phosphatase activity
  - Calcium Assay
  - RT-PCR

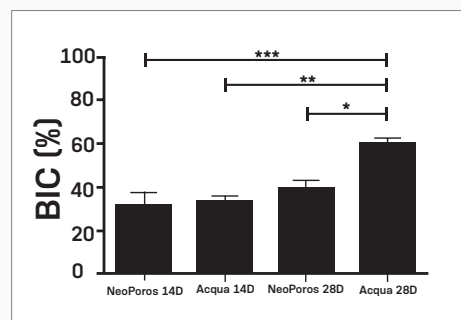
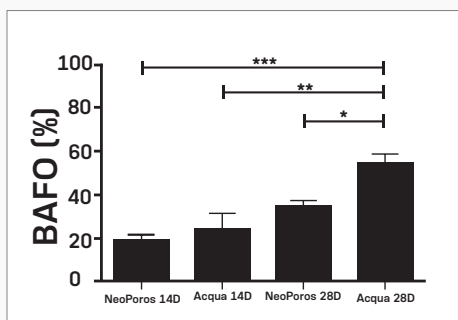
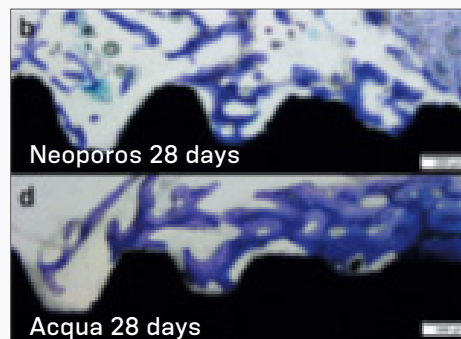
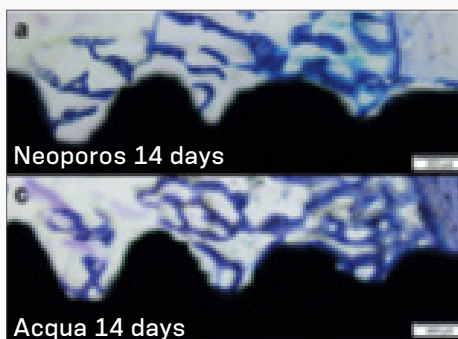
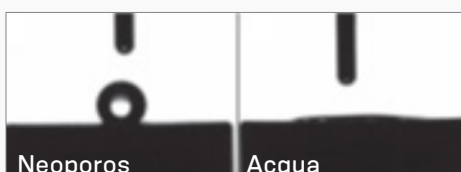
## Results and Conclusion:

Both surfaces were able to modulate hMSCs responses toward osteoblast differentiation. Increased expression of genes related to the process of osteogenic differentiation as well as increased alkaline phosphatase activity and calcium content was observed for Acqua surface.

Mendonça G, Mendonça DBS, Oliveira LS, Araújo CA. Effect of hydrophilic implant surfaces on differentiation of human mesenchymal stem cells. *ImplantNews* 2013;10(6a-PBA)



The surface chemistry and wettability of implants accelerate osseointegration and increase the area of the bone-to-implant interface in rabbit tibia - **Acqua accelerated bone to implant contact**



## Material & Methods:

- 40 dental implants
- Histomorphometric evaluation:
  - 7, 14, 21 and 28 days post-implantation

## Results and Conclusion:

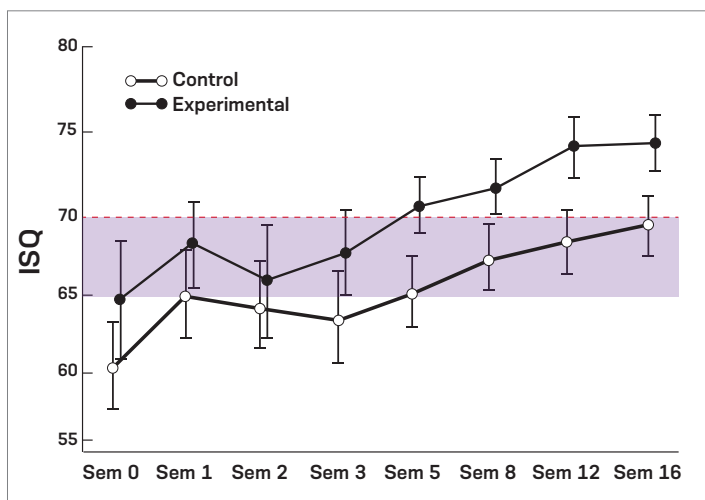
The surface chemistry and wettability of Acqua implants accelerated the implants' osseointegration and increased their bone-to-implant interface relative to the findings obtained for Neoporos implants.

Sartoretto SC, Alves AT, Resende RF, Calasans-Maia J, Granjeiro JM, Calasans-Maia MD. Early osseointegration driven by the surface chemistry and wettability of dental implants. *J Appl Oral Sci.* 2015 May-Jun;23(3):279-87. doi: 10.1590/1678-775720140483.

# NEODENT® ACQUA SCIENTIFIC DATA



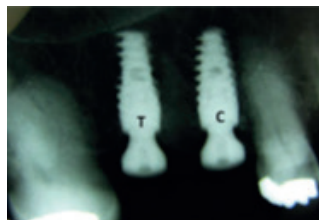
Implants with hydrophilic surface integrate faster than implants with sandblasted acid-etched surface, as suggested by a clinical study.<sup>3</sup>



**Aim:** The aim of this randomized clinical trial was to statistically compare the implant stability quotient (ISQ) results obtained by implants of the same design, length, and diameter with Neoporos and Acqua surfaces placed at the posterior area of the maxilla within the initial 16 weeks of follow-up.

## Material & Methods:

- 21 patients, 64 implants
- Posterior maxilla (premolar and molar)
- No prosthetic procedure before 16 weeks
- Resonance frequency measurements (ISQ, Osstell) and clinical assessment : Immediate post-surgical to 16 weeks evaluation



## References

- 1 Rupp F, Scheideler L, Eichler M, Geis-Gerstorfer J. Wetting behavior of dental implants. Int J Oral Maxillofac Implants. 2011 Nov-Dec; 26(6):1256-66.
- 2 Bico J, Thiele U, Quéré D. Wetting of textured surfaces. Colloids and Surfaces. A: Physicochemical and Engineering Aspects 206 (2002) 41-46.
- 3 Novellino MM, Sesma N, Zanardi PR, Laganá DC. Resonance frequency analysis of dental implants placed at the posterior maxilla varying the surface treatment only: A randomized clinical trial. Clin Implant Dent Relat Res. 2017 Oct;19(5):770-775. doi: 10.1111/cid.12510

**Results and Conclusion:** The stability gain of implants with hydrophilic surface (Acqua) was 2.24 times faster than the group with the Neoporos surfaces

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www.neodent.us • www.neodent.ca



Straumann North American Headquarters  
Straumann USA, LLC  
60 Minuteman Road  
Andover, MA 01810  
Phone 800/448 8168 (US) • 800/363 4024 (CA)  
Fax 978/747 2490  
www.straumann.us • www.straumann.ca

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