

# Research & Table Clinic Day 2020 Structured Abstract

**TITLE:** Human Saliva Contact Angles on Three Types of Denture Bases

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## **OBJECTIVES:**

Contemporary denture base resins are available as 3 types: conventional, heat-processed (CONV), 3D printed (PRINT), or 3D milled (MILLED). This project measured and compared surface contact angle of human saliva to each type denture base, either as-processed (AP) or polished (POL).

## **METHODS:**

Unstimulated, human saliva was obtained in one sitting from a healthy female subject. Saliva was placed into Eppendorf containers and centrifuged (15,000 rpm, 3 min), and then kept frozen until use (-80°C). Specimen tabs (13x13x2mm) were fabricated from different types of denture base materials: CONV (Lucitone 199, Dentsply Sirona), PRINT (NextDent Base, NextDent), MILLED (Ivobase CAD, Ivoclar). Specimens were then polished or not, and stored in water, or not. A single Eppendorf container was thawed, and 5 mL was drawn up into a computer-controlled syringe in a contact angle measurement instrument (DAS100, Krüss). Advancing contact angle measurements were made by dispensing 10µL of saliva at 10µL/min for 1 min, after which the needle was withdrawn, and a static contact angle measurement was determined for each type material (during a 1-min period). Eight replications were made for each test condition, using each specimen surface only once.

## **RESULTS:**

A 3-way ANOVA on the advancing angle data indicated no significant influence of any factor (except storage condition: wet>dry,  $p<0.001$ ). Similar analysis for the static angle values also indicated a significant influence of storage condition (wet>dry,  $p<0.001$ ) and also a significant interaction of MATERIAL\*FLUID ( $p=0.038$ ), within dry: CONV and PRINT were not significantly different; within wet: CONV and MILLED were not significantly different.

## **CONCLUSIONS:**

In general, the major factor affecting contact angle of unstimulated, human saliva among the 3 different denture base types was if the substrate was wet (greater angle) or dry (lower angle).

## **LEARNING OBJECTIVES:**

1. State the clinical relevance of contact angle measurement of human saliva on denture base materials.
2. State limitations involved with using different types of contact angle measurement methods with human saliva.
3. State the effect of denture base type (conventional, printed, or milled), storage condition (wet/dry), and surface finish (as-made/polished) on human saliva contact angle.