

Dimensional stability of an addition silicone after disinfection/sterilization



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Introduction: Dental impressions play a key role in clinical practice, and it is crucial to know the impact of disinfection or sterilization on it. The success of oral rehabilitation depends on the accuracy and reproducibility of the oral impressions [1,2,3]. The addition silicones and polyethers tend to be used most frequently for its physical and mechanical properties, such as dimensional stability [1,4,5].

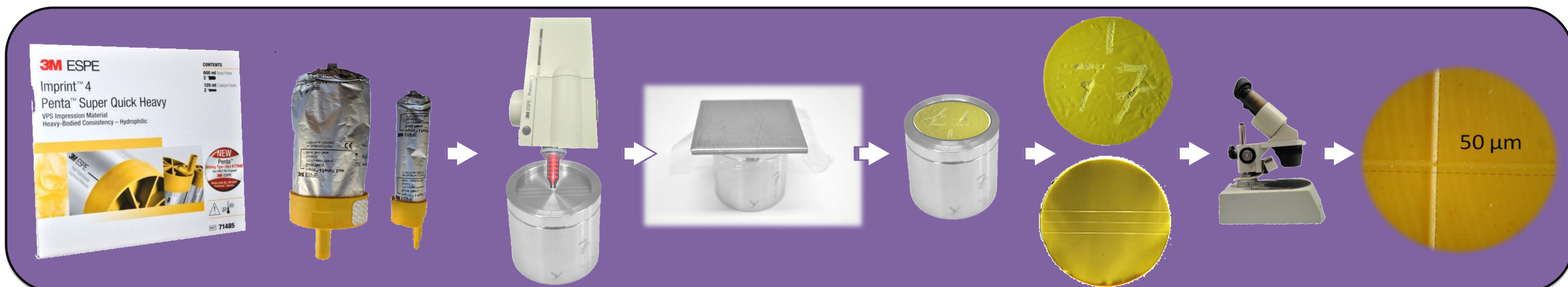
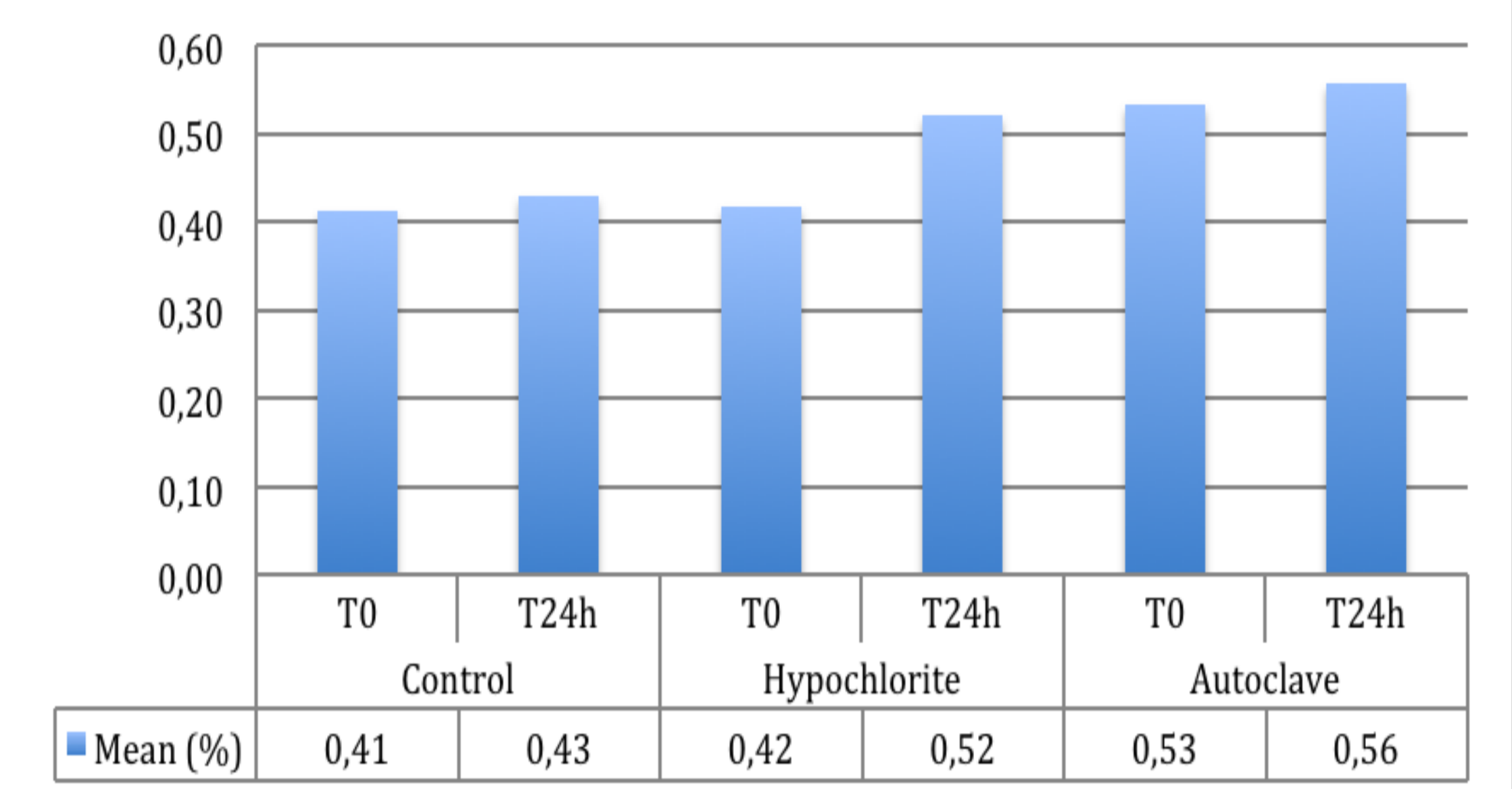
Objective: The propose is to study the disinfection and sterilization impact in the dimensional stability of Imprint™ 4 Penta™ Super Quick Heavy (3M ESPE™, Seefeld, Germany).

Methods: One commercial brand of addition silicone was used in an automatic mixing machine, Pentamix 2 (3M ESPE™): Imprint™ 4 Penta™ Super Quick Impression Material (3M ESPE™).

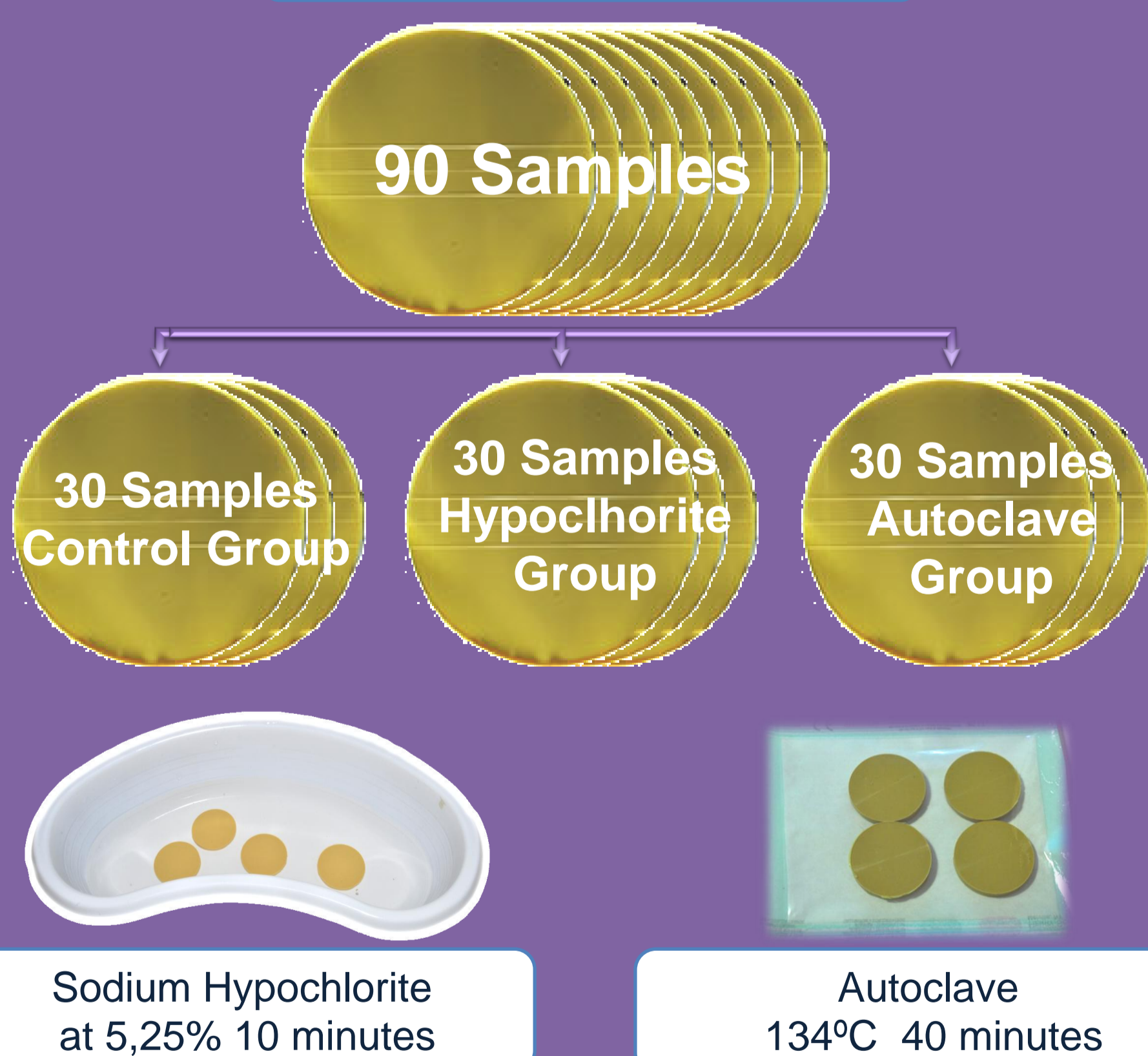
Ninety samples of each impression material were obtained with a metallic matrix from ISO 4823:2000 [6]. The matrix was filled up with the impression material and they were divided into 3 groups: Control, Hypochlorite and Autoclave. The Control group was not subjected to any disinfection method. The samples on the Hypochlorite Group were submerged for 10 minutes in Sodium Hypochlorite at 5,25%. The Autoclave Group was subjected to 134°C for 40 minutes. All samples were measured with an interferometric laser after the procedure (T0) and 24 hours later (T24h).

Results and Discussion: The control group samples of the Imprint™ 4 Penta™ Super Quick (3M ESPE™) had the most similar dimensions to the matrix with a maximum dimensional change of 0,41% on T0 and 0,43% after 24 hours. The greater contraction of 0,56% occurred in the autoclave group after 24 hours. However, the hypochlorite showed the most significant contraction between the T0 (0,42%) and T24h (0,52%).

Imprint™ 4 Penta™ Super Quick (3M ESPE™) dimensional change (%)



Groups Constitution



Interferometric Laser Measuring



Conclusion: The studied impression material suffered dimensional changes. However, according to ISO 4823:2000, these changes aren't significant once they don't exceed 1,5%. Therefore, we have come to the conclusion that these materials can be submitted to steam autoclave sterilization or disinfected with an hypochlorite solution.

References

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