

Introduction

The aim of this *in vitro* study was to analyze the two-body wear resistance of artificial composite resin teeth in relation to artificial acrylic resin teeth.

Methods

Eight standardized specimens (diameter 5 mm, 2 mm thick) were prepared for each of nine tooth types representative of artificial anterior acrylic and composite resin teeth (Fig. 1).

Specimens were polished, and subjected to mastication simulation (50 N, 1.2 x 10⁵ cycles, 1.2 Hz) using a pin-on-block design (Fig. 2) and additional thermal cycling (600 cycles, 5/55°C, 2 min/cycle). Steatite balls (diameter 3 mm) were used as antagonists.

Vertical substance (Fig. 3) and volume loss (Fig. 4) were analysed using cast replicas and an optical 3-dimensional surface profilometer.

INPEN	Bioplus (Dentsply, G)
	Integral (Merz Dental, G)
	Genios A (Dentsply, G)
	Polystar Selection (Merz Dental, G)
PMMA	Premium 6 (Heraeus Kulzer, G)
	Vitapan (Vita, G)
PMMA, filled	
DCL	SR Vivodent DCL (IvoclarVivadent, FL)
Composite	SR Phonares NHC (IvoclarVivadent, FL)

Figure 1. Artificial teeth used in this study.

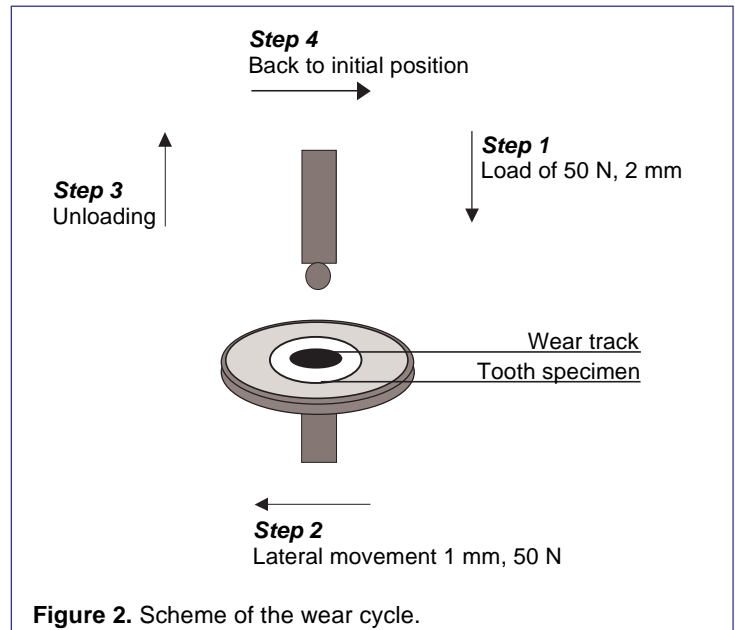


Figure 2. Scheme of the wear cycle.

Medians and 25/75 percentiles were calculated, and data were analyzed using the Kruskal-Wallis and the Mann-Whitney U-test (p=.05).

Results

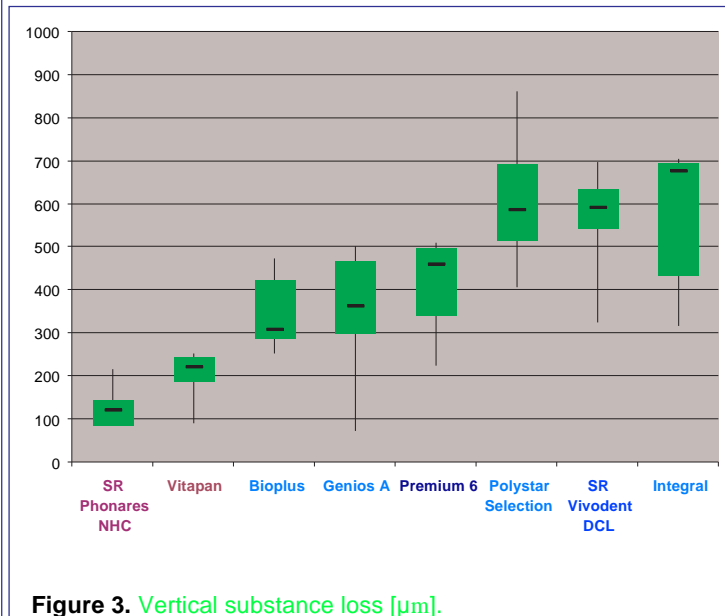


Figure 3. Vertical substance loss [μm].

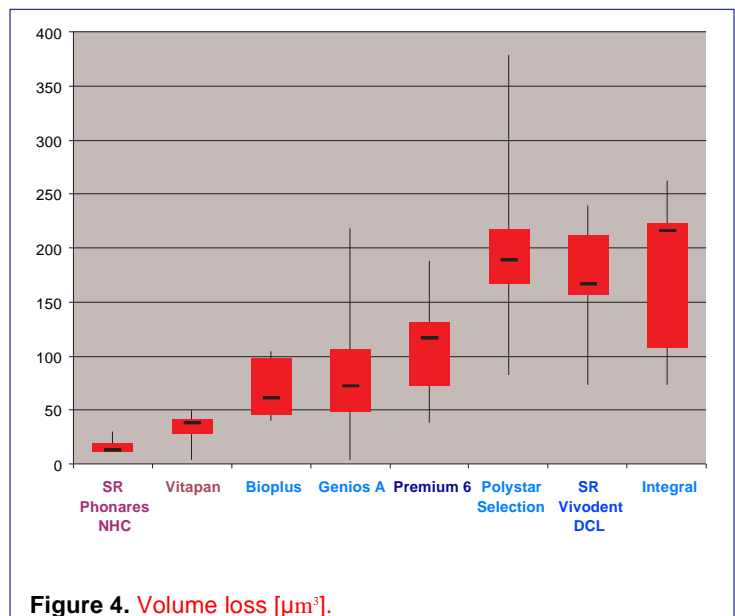


Figure 4. Volume loss [μm^3].

Conclusions

Within the limitations of an *in vitro* study, it can be concluded that artificial composite resin teeth SR Phonares NHC show low values for vertical substance and volume loss, which indicates promising wear behaviour *in vivo*.