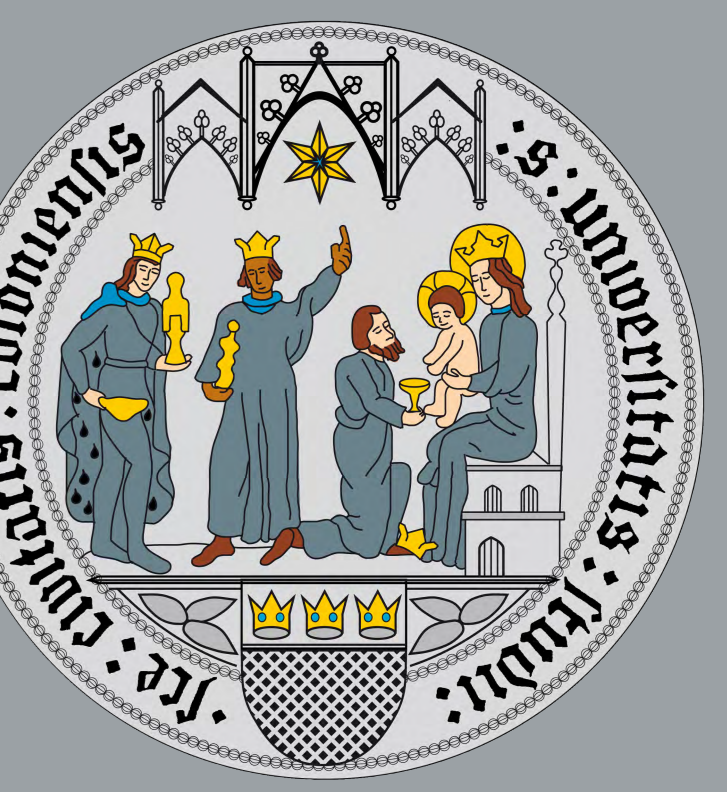


Repair strength of hypoallergenic denture base materials

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Introduction

Due to the general increase in patients with allergic reactions, dentists are confronted with more patients with allergic reactions to the classic PMMA denture base materials. This in vitro study compared flexural strength and flexural modulus of repaired hypoallergenic denture base materials, with flexural strength/modulus of a PMMA heat-polymerizing acrylic resin.

Materials and Methods

Eight denture base resins were examined (Tab. 1).

Denture base material	Manufacturer	Group
Eclipse	Dentsply, York, PA, USA	E
LUXENE 1180	Astron Dental, Lake Zurich, IL, USA	L
Microbase	DeguDent, Hanau, D	M
Polyan	Polyapress, Womrath, D	Po
Puran HC	Novodent, Eschen, FL	Pu
Sinomer	Novodent, Eschen, FL	S
Ther.r.mo.Free	Pressing Dental, Dogana, San Marino	T
Paladon 65	Heraeus Kulzer, Hanau, D	Pa

Specimens of each material (intact group, 2 x n=5) were tested for flexural strength and flexural modulus according to ISO 1567.

Fractured specimens (except L, Po, T) were repaired with the recommended repair materials (R, n=5), and (except Pa) with Versyo.com (V, n=5) (Tab. 2).

Repair material	Manufacturer	Group
Eclipse	Dentsply, York, PA, USA	R _E
-	*Rebasing recommended	-
Microbase	DeguDent, Hanau, D	R _M
-	*Rebasing recommended	-
Puran CC	Novodent, Eschen, FL	R _{Pu}
Sinomer cold C	Novodent, Eschen, FL	R _S
-	*Rebasing recommended	-
Palapress	Heraeus Kulzer, Hanau, D	R _{Pa}
Versyo.com	Heraeus Kulzer, Hanau, D	V

Testing of flexural strength and flexural modulus was repeated.

The data were analyzed with 1-way ANOVA and Bonferroni-Dunn's multiple comparisons post hoc analysis ($\alpha=.05$).

Results

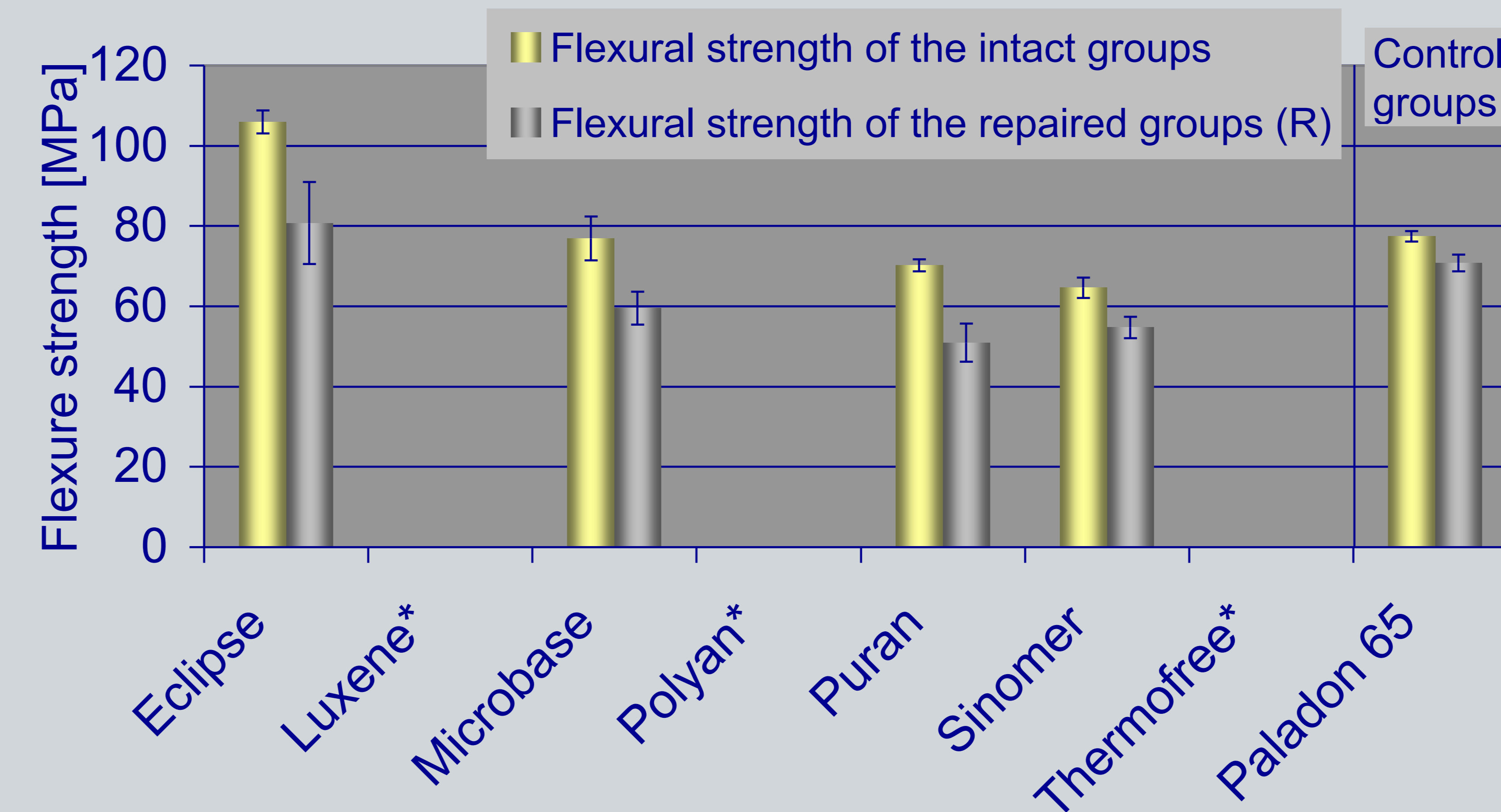


Fig. 1 Flexural strength of specimens repaired with the recommended material compared to the intact groups

Significantly higher flexural strength was obtained from the repaired T/V (62 ± 2 MPa, $P=.001$) compared to the intact group (Fig. 2). The flexural strength of repaired S/V (53 ± 3 MPa, $P>.05$) did not differ significantly from the intact material. Flexural strength of the other materials repaired with R or V were

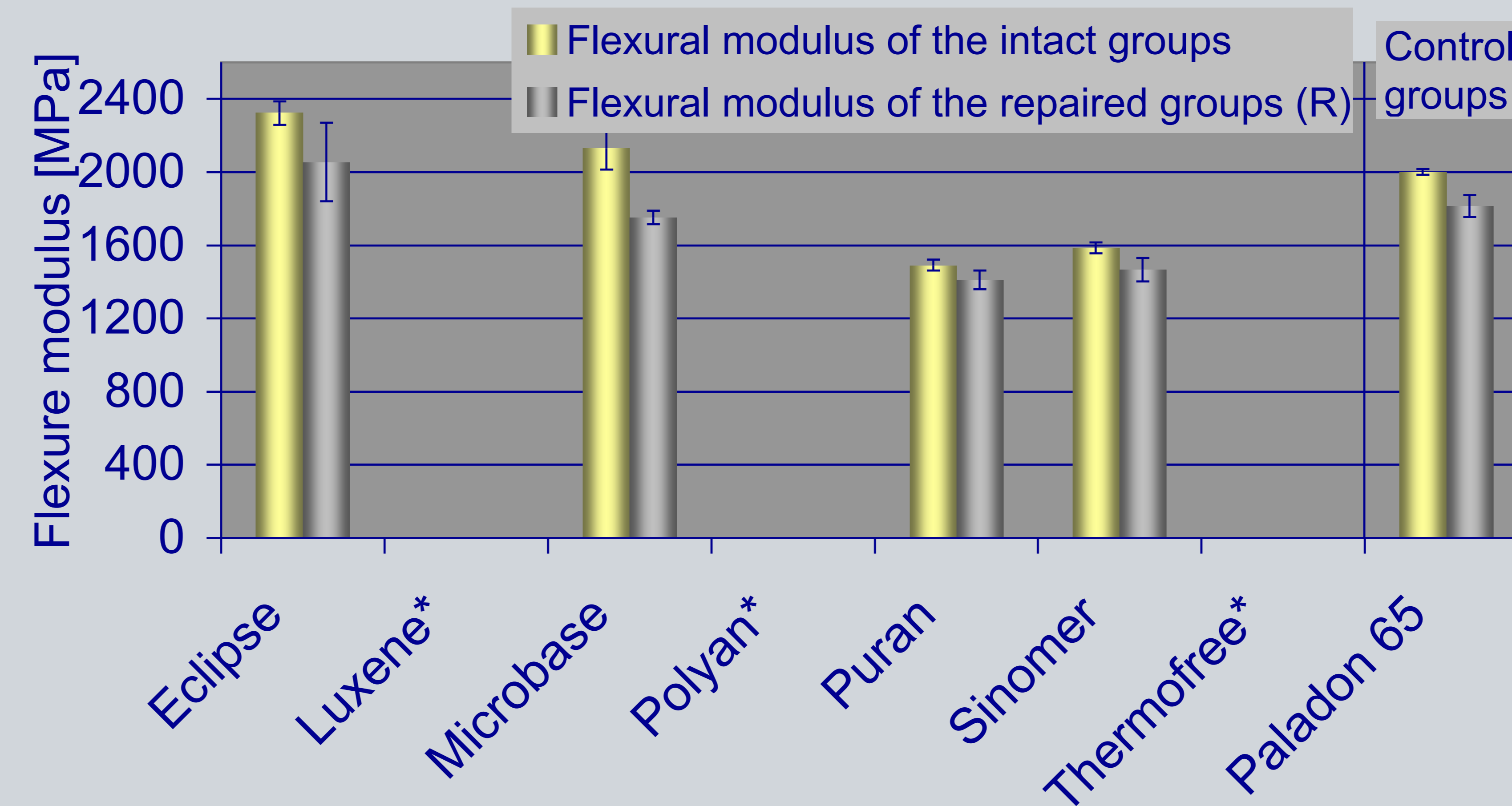


Fig. 3 Flexural modulus of specimens repaired with the recommended material compared to the intact groups

Flexural modulus of repaired T/V and Pu/V ($P<.05$) was significantly higher than the intact material (Fig. 4). Flexural modulus of the other materials repaired with R or V was significantly lower than the intact specimens (Fig. 3, 4). Pu and S groups (R, V) and T/V specimens exhibited significantly lower flexural

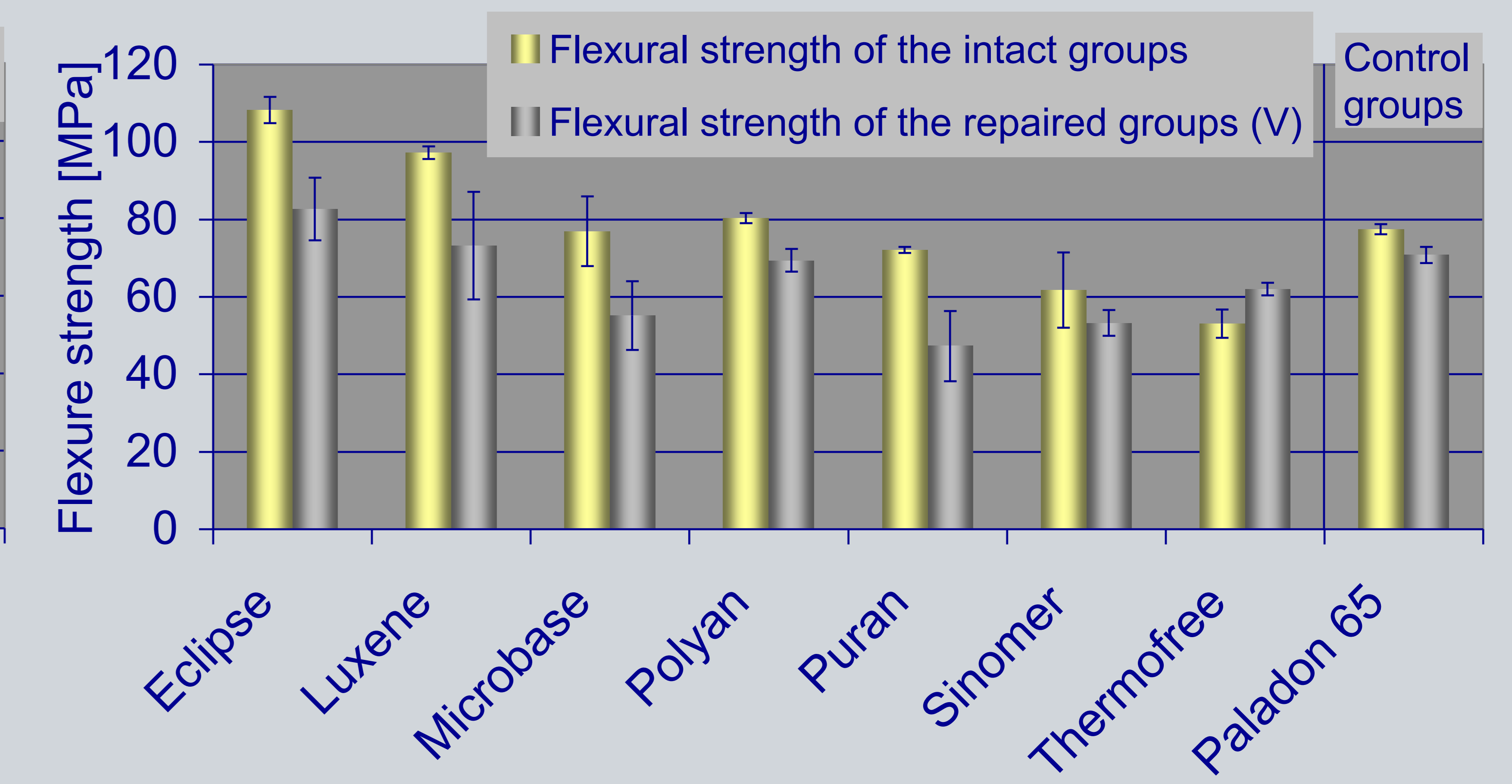


Fig. 2 Flexural strength of denture base materials repaired with Versyo.com compared to the intact groups

significantly lower than the intact specimens (Fig. 1, 2). Pu and S groups (R, V) exhibited significantly lower flexural strength than repaired Pa (71 ± 2 MPa). No differences were detected for the other materials compared to repaired Pa ($P>.05$), Fig. 1, 2).

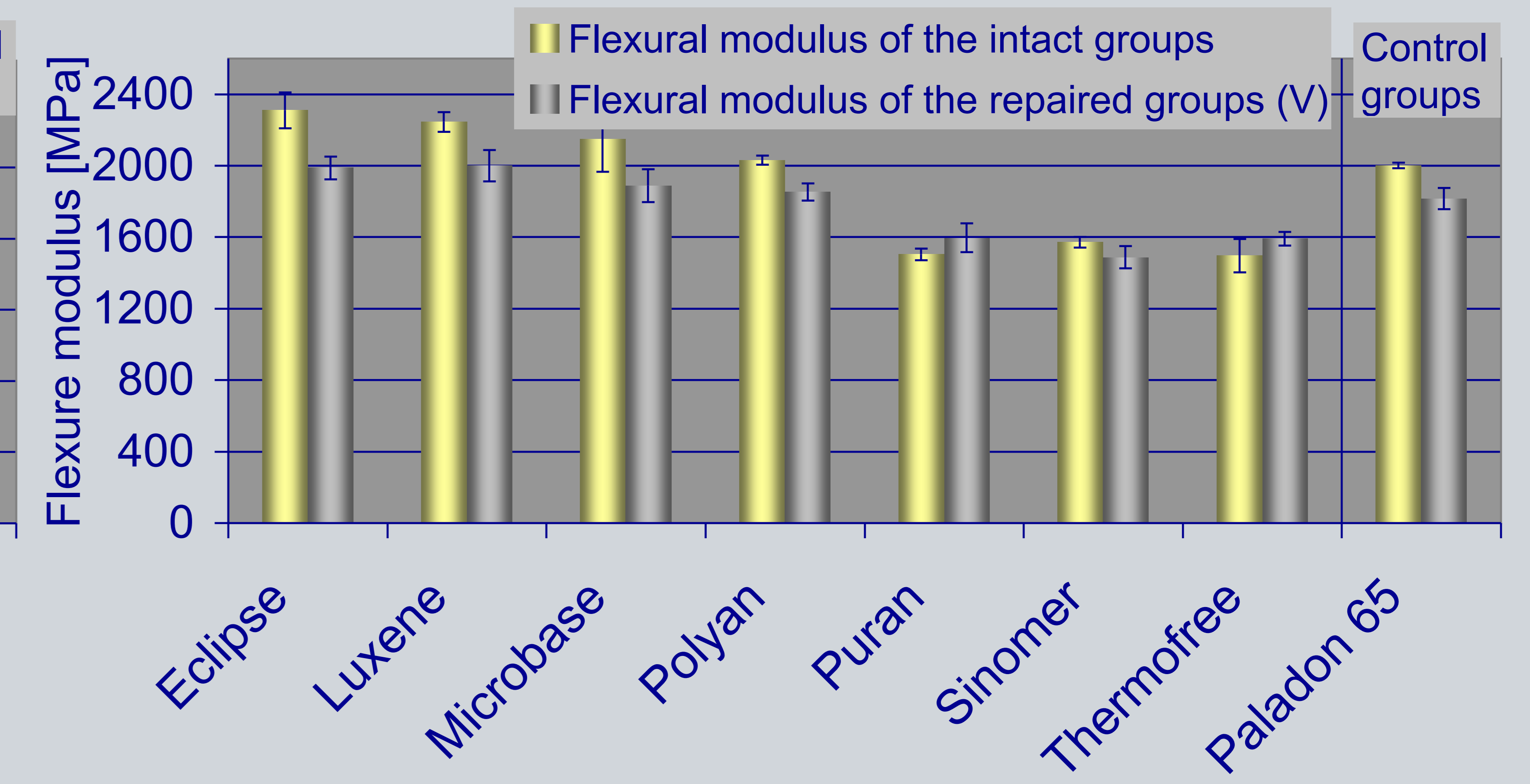


Fig. 4 Flexural modulus of denture base materials repaired with Versyo.com compared to the intact groups

modulus than repaired Pa (1815 ± 59 MPa). Except for E/R, which was significantly stronger, no differences were detected for the other materials compared to repaired Pa. Repaired specimens showed similar flexural strength and modulus values for R and V ($P>.05$), Fig. 1-4).

Conclusion

Most of the tested materials repaired with R or V exhibited similar flexural strength and modulus as the repaired PMMA-material.