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سھام سايس*

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(AAS)
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Ni release from polished or PFM fired Ni-Cr dental casting alloys

*Siham Sayes

Abstract

Nickel metal may cause systemic toxicity and allergy. The compatibility of dental casting alloys correlates with their release of elements. The aim of this study was to specify the relationship of the release of nickel from Ni-Cr dental alloys with their composition, and to determine the effects of thermal treatment of Ni-Cr alloys during porcelain firing process on the release of nickel.

Ranging Five Ni-Cr alloys commonly used in clinical practice were used, They have different nickel percentage Ranging between and %, two of them containing beryllium. Alloy specimens were made for each alloy, and divided equally in two groups, polished only or heat treated and then polished. All specimens were incubated into acidic artificial saliva solution (PH =) for periods : hours, hours and hours, with a new solution in every new period. Release of elements was determined by atomic absorption spectroscopy (AAS).

The results showed that the dissolution of nickel from Ni-based alloys was related to nickel percentage in the alloy composition. Alloys containing 10 – 20 % nickel, released nickel less nickel than alloys containing 30 – 40 % nickel . Ni release decreased with increased Cr content in alloy , alloys containing over 50 Cr released less nickel than alloys containing 30 Cr. Nickel dissolution seems to be exacerbated by the presence of beryllium . Also, the thermal treatment of dental casting alloys during porcelain firing process exacerbated Ni dissolution .

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Elastic modulus

Anusavice)

Craig Walls McCab

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Biocompatibility

Yield strength

Element release

Wataha) –

Malcolm Wataha

Benatti

Bayramoglu

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Systemic toxicity

Corrosion

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Wataha)

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%	Be %	Mo %	Cr %	Ni %	
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Si , ,Fe , Ce, Co, Al	-				Hanau, Germany RemaniumCS Dentaurum
/Fe , / /Si /Nb C , /Ce ,	-	,	,		Pforzheimm Germany Wiron Bego Bremen, Germany
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W , /Ti ,					Jeneric/ Pentron Wallingford, U.S.A
V	,	-	,	,	BiobondII Dentsply international York, U.S.A

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Remanium / one way ANOVA

/ CS

Rexillium III Post Hoc test

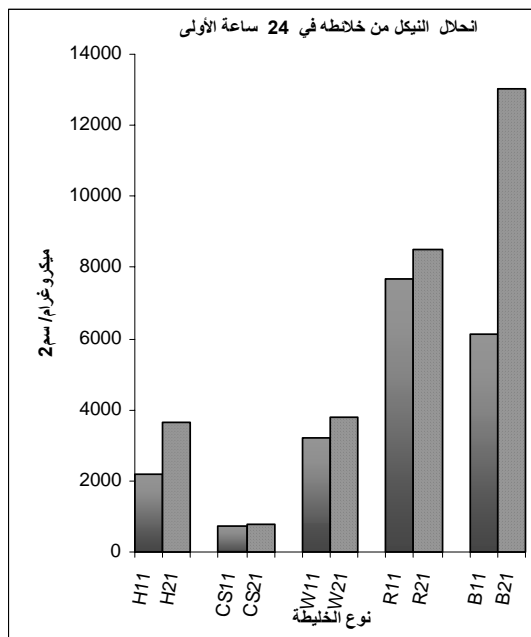
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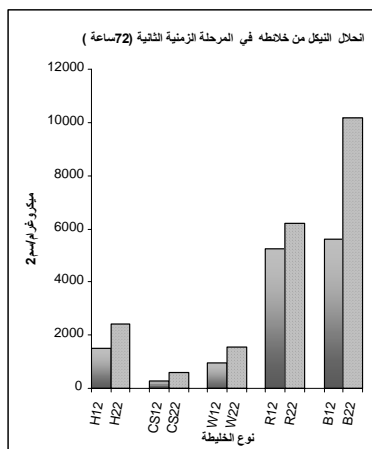
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R	R	Rexillium III	
B	B	Biobond II	
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CS	CS	Remanium CS	
W	W	Wiron	
R	R	Rexillium III	
B	B	Biobond II	
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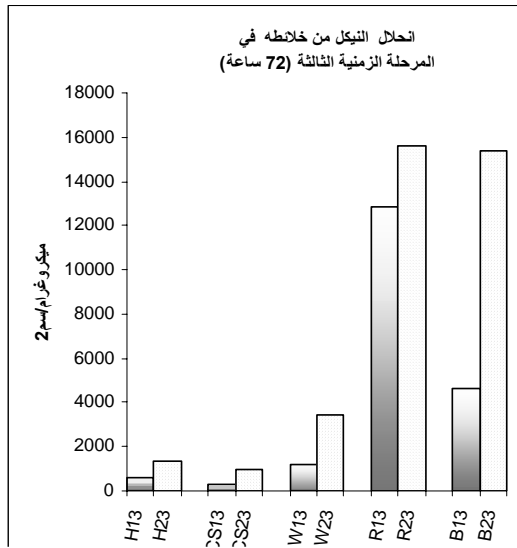
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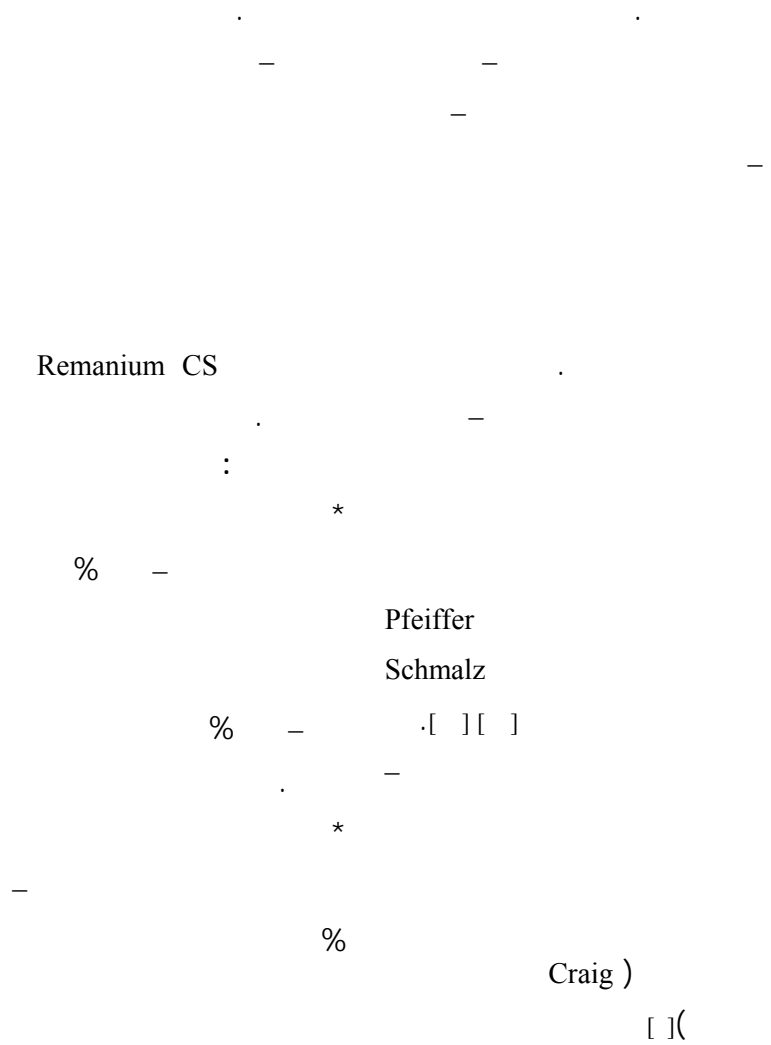
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