

The effect of diode laser and photoactivated disinfection on root canal *Enterococcus faecalis* biofilm

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قَالَ اللَّهُ تَعَالَى
إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ

Dedication

**To my dearest family, older sister,
my husband and my two little angels
For their kindness, generosity and
endless support**

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Table of Abbreviations

1-	AgNPs:	Silver Nanoparticles.
2-	Ag₂O:	Silver Oxide.
3-	Au:	Gold.
4-	ATPase:	Adenosine Triphosphatase.
5-	CFU:	Colony Forming Units.
6-	<i>C. albicans</i>	Candida albicans
7-	Ca (OH)₂:	Calcium Hydroxide.
8-	CHX:	Chlorhexidine.
9-	CMD:	Chemo- mechanical Debridement.
10-	<i>E.coli</i>	Enterococcus coli
11-	EDTA:	Ethylene Diamine Tetra- Acetic Acid.
12-	EDTAC:	EDTA plus Cetavlon.
13-	<i>E. faecalis</i>	Enterococcus faecalis
14-	Er,Cr:YSGG Laser:	Erbium:Cribrium:YAG
15-	Er: YAG laser:	Erbium Yag Laser.
16-	EOS:	Eosin.
17-	ERI:	Erythrosine.
18-	<i>F. nucleatum</i>	Fusobacterium nucleatum

19-	Ho:YAG Laser:	Holmium Yag Laser.
20-	HeNe Laser:	Helium- neon Laser.
21-	IKI:	Iodine potassium iodide.
22-	J:	Joul.
23-	LED:	Light- Emitting Diode.
24-	LAD:	Light Activated Disinfection.
25-	LAAA:	Light Activated Antimicrobial Agents.
26-	Laser:	Light amplification through simulated emission of radiation
27-	Log:	Logarithm,
28-	MTAD	Mixture of tetracycline, acid and detergent
29-	MB:	Methylene Blue.
30-	MG:	Malachite Green.
31-	µm:	Micrometer.
32-	mW:	Milli Watt.
33-	MRSA:	Methicillin- resistant Staphylococcus aureus
34-	MBCs:	Minimum Bactericidal Concentrations.
35-	NaOCl:	Sodium Hypochloride.
36-	NaCl:	Sodium Chloride.
37-	Nd:YAG Laser:	Neodymium- doped Yttrium Aluminum Garnet Laser.
38-	NR:	Neutral Red.
39-	Nm:	Nano meter.

40-	PDT:	Photodynamic Therapy.
41-	PS:	Photosensitizer.
42-	Phs:	Photosensitizers.
43-	PDL:	Periodontal Ligament.
44-	PAD:	Photoactivated disinfection
45-	PACT:	Photodynamic Antimicrobial Chemotherapy.
46-	PDT:	Photodynamic therapy
47-	PLGA:	Poly lacticco-glycolic acid
48-	<i>P. gingivalis</i>	Porphyromonas gingivalis
49-	QTH:	Quartz-Tungsten-Halogen
50-	ROS:	Reactive Oxygen Species.
51-	RB:	Rose Bengal.
52-	<i>S. anginosus</i>	Streptococcus anginosus
53-	<i>S. intermedius</i>	Streptococcus intermedius
54-	<i>S. mutans</i>	Streptococcus mutans
55-	TBO:	Toluidine Blue Ortho.
56-	TEM:	Transmission Electron Microscope
57-	t-RNA	Transfer Ribonucleic acid
58-	TiO₂:	Titanium Oxide.
59-	Th Cells:	T (Lymphocyte) helper Cells.
60-	SEM:	Scanning Electron Microscope (y).

61-	S:	Second.
62-	UV:	Ultraviolet Rays.
63-	W:	Watt.
64-	ESEM:	Enviromental scanning electron Microscop