DEVELOPMENT OF A PORTABLE AND RAPID DECALCIFICATION DEVICE FOR ORAL HARD TISSUE SPECIMENS

Authors: Upasana Das, Vijayalakshmi Bhat, Taniya Feroz, Sowmya SV, Dominic Augustine

AIM:

To develop a portable and rapid decalcification unit and compare its diagnostic efficacy with other conventional techniques

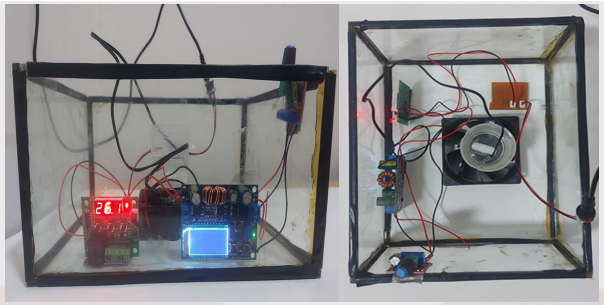
METHODOLOGY:

An observational in-vitro study was conducted using 30 teeth and bone specimens each

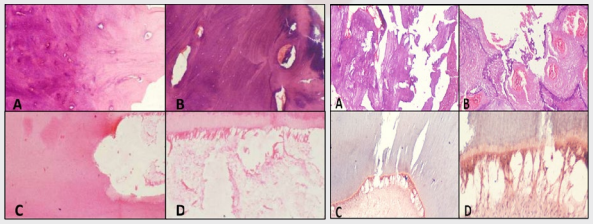
- Conventional method: Specimens were immersed in 5% nitric acid till the end point of decalcification
- Microwave method: Specimens were irradiated by keeping it in 5% nitric acid within the oven
- Electrolytic method: Specimens were suspended using platinum wire and then the electricity was passed in the electrolytic chamber

OBJECTIVES:

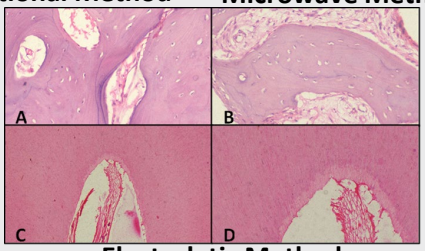
- To develop and design a portable and rapid electrolytic decalcification unit
- To decalcify human teeth and bone specimens using conventional, microwave and electrolytic decalcification methods
- To compare the efficacy of the developed decalcification unit with microwave and conventional methods



Electrolytic Device



Conventional Method **Microwave Method**



Electrolytic Method

RESULTS:

Summary of the analysis of teeth specimens

Parameters	Scores	Number of teeth specimens showing the parameters in		
		Conventional method	Microwave method	Electrolytic method
Discolouration of specimens	1(present)	8	5	2
	2(absent)	2	5	8
Dentinal Tubules	1(ill-defined)	6	6	3
	2(well defined)	4	4	7
Nuclear cytoplasmic contrast	1(no contrast)	2	4	5
	2(good contrast)	7	4	5
	3(bad contrast)	1	2	0
Dentino-enamel junction	1(ill-defined)	3	5	2
	2(well-defined)	7	5	8
Uptake of stain	1(understained)	1	1	1
	2(optimal -stained)	2	7	5
	3(over-stained)	7	3	4
Pulp shrinkage	1(present)	2	2	5
	2(absent)	8	8	5
Odontoblastic layer	1(mild damage)	8	3	4
	2(no damage)	2	7	6

Summary of the analysis of the bone specimens

Parameters	Scores	Number of bone specimens showing the parameters in		
		Conventional method	Microwave method	Electrolytic method
Discolouration of the specimens	1 (present)	7	4	2
	2 (absent)	3	6	8
Reversal lines and resting lines	1 (ill defined)	5	3	4
	2 (well defined)	5	7	6
Retraction of osteocyte from lacunae	1 (present)	4	6	2
	2 (absent)	6	4	8

CONCLUSION:

- A novel, rapid, portable and economical electrolytic decalcification device has been developed
- This device will be of great use at rural setup and in screening camps for diagnostic accuracy of hard tissue pathologies in a short span of time

Poster No. 73; South Jordan

ROSEMAN UNIVERSITY OF HEALTH SCIENCES
TRANSFORMING EDUCATION REIMAGINING HEALTHCARE EMBRACING DISCOVERY COMMITTED TO COMMUNITY