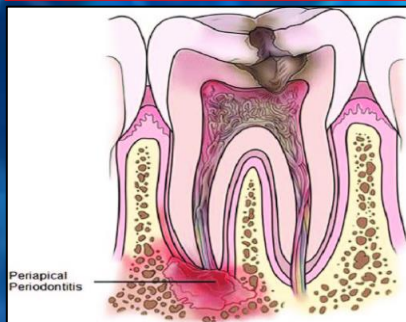


EFFECT OF METABOLOME IN PERIAPICAL HEALING

The metabolome is the complete set of small molecules, or metabolites, present within a cell, tissue, or organism.

Periapical periodontitis



Metabolites are the end products of cellular processes and reflect the physiological state of a cell or organism at a specific set of time

Metabolomic profiling technology



Liquid chromatography

- Gas chromatography
- Magnetic resonance spectroscopy

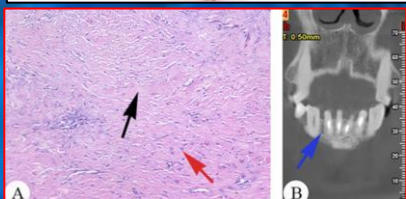
Metabolites and their role in healing

1. Anti inflammatory metabolites
L- Tryptophan, glucosamine, N-acetyl- D-glucosamine
2. Bone protection Metabolites
Methionine,
3 Methyl thiopropionate, L-Phenylalanine
3. Immune modulating Metabolites
L-Asparagine, L-Serine.

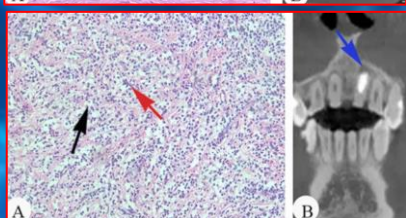
Mechanism of action

- Reduces inflammation
- Inhibition of bone resorption
- Antioxidant activity

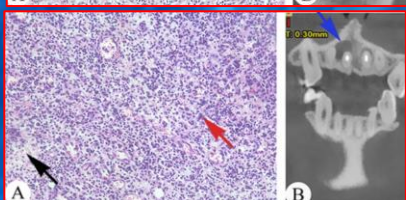
Grade 1



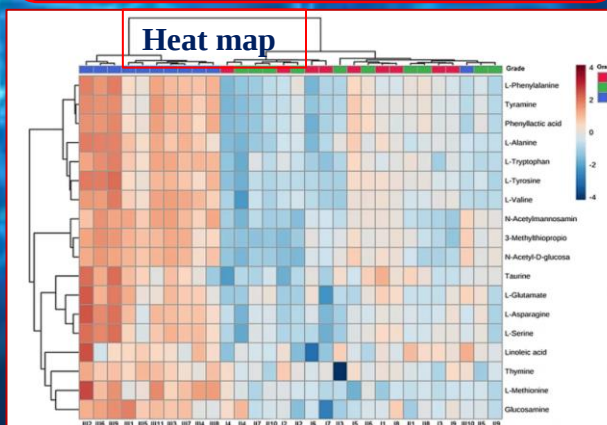
Grade 2



Grade 3



Heat map



Therapeutic implications

- Root canal medicaments- Glucosamine
- Methionine injection-wound healing
- Systemic supplements- glucosamine, L-tryptophan, methionine.
- Antioxidants – vit- A,E.
- Nanotechnology-Enabled Metabolite Delivery Systems- methionine, tryptophan.
- Topical Gels for Post-Surgical Healing- as glucosamine or serine.

Huang Y et al 2021

Ding J et al 2024