

## **Abstract**

*Purpose:* To evaluate the surface substructure, inorganic and organic components present in partially demineralized tooth bone graft material of young and old, male and female subjects.

*Methodology:* A total of 30 extracted teeth was collected, 15 belonging to young patients and, the remaining 15 belonging to old patients, and, segregated into 4 subgroups and a control group. The teeth were cleaned thoroughly using tungsten bur, washed under distilled water and air dried and powdered using **Smart Dentin Grinder** and demineralized with 0.6M Hydrochloric acid, except, for the control group. The samples were subjected to **Scanning electron microscope** and **Energy dispersive X-ray analysis** for assessing the surface substructure and inorganic component, and **Bradford Assay** to assess the protein content.

*Results:* The **Scanning electron microscope analysis** revealed the presence of elongated dentinal tubules surrounded by ribbon like collagen and, crystals of hydroxyapatite densely covering the dentinal tubules in young subject, in old subjects samples the dentinal tubules were clearly appreciated, collagen fibers were not visible, and hydroxyapatite crystals randomly scattered in clusters. **The Energy dispersive X-ray results showed statistical significance in the Calcium Phosphorus ratio between the groups.** **Bradford Assay**, showed higher concentration of proteins in female subject samples irrespective of age.

*Conclusion:* The **Scanning electron microscope analysis** and **Energy dispersive X-ray** results showed young subjects had more densely packed hydroxyapatite crystals, collagen and slightly higher Calcium Phosphorus ratio compared to the old subjects.

**Bradford Assay** analysis, showed high protein concentration in female subjects irrespective of age.