

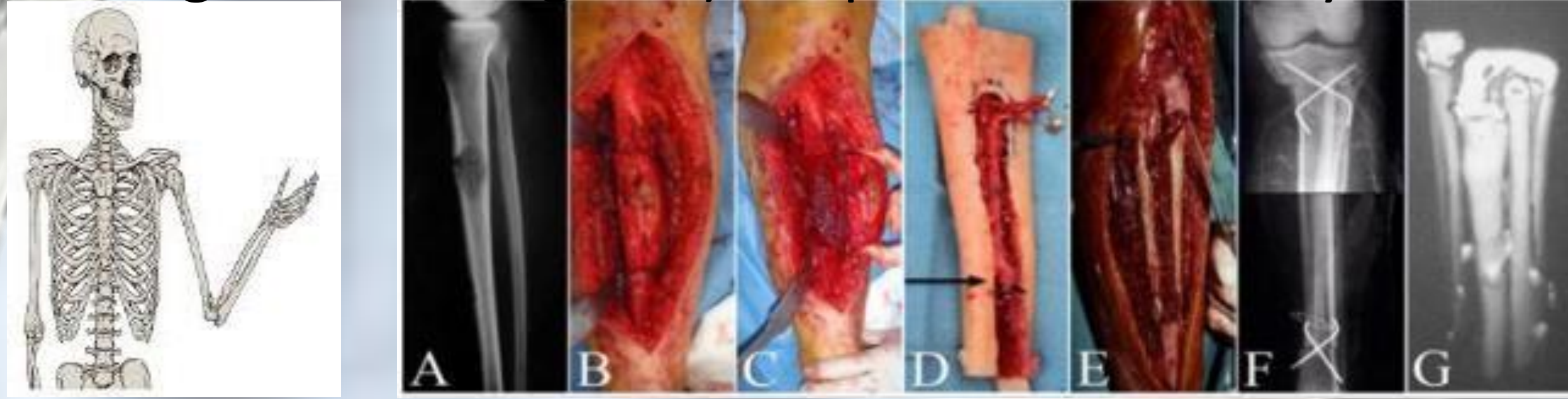
Development of a new bone scaffold for the treatment of large bone defects

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AIM: The development of an absorbable osteoconductive biomaterial which provides a multifunctional scaffold for the growth of new bone and have antibacterial properties.

Introduction:

Large bone defects are typically caused by incidents such as fractures, diseases, trauma or surgeries. Worldwide more than 3.5 million bone grafts (either autografts or allografts) are performed each year.

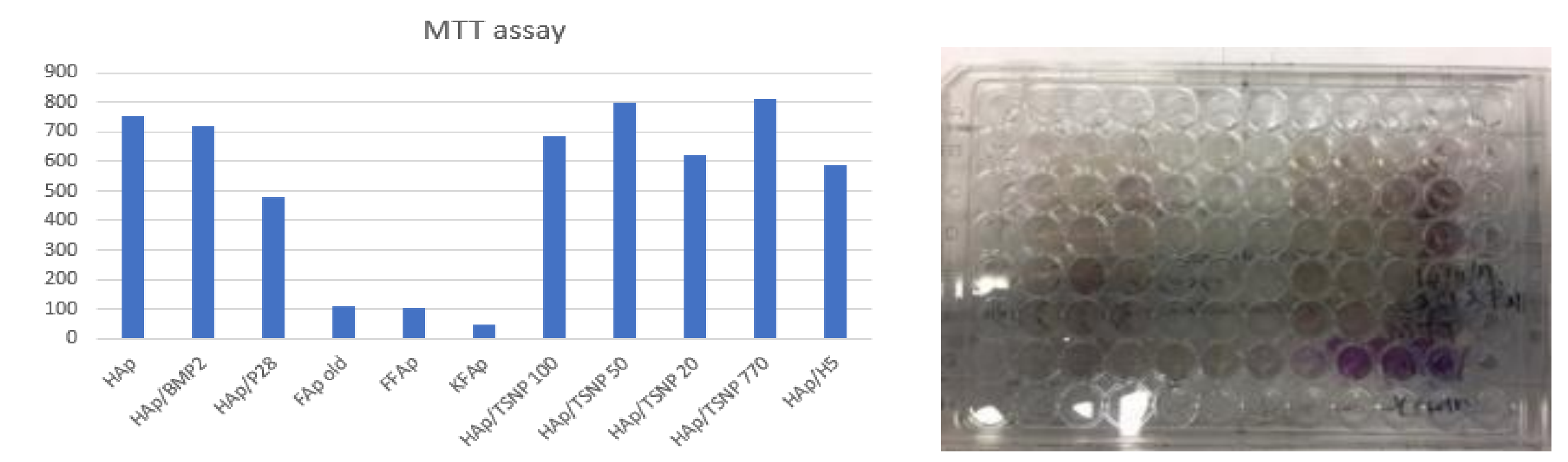


Conclusion:

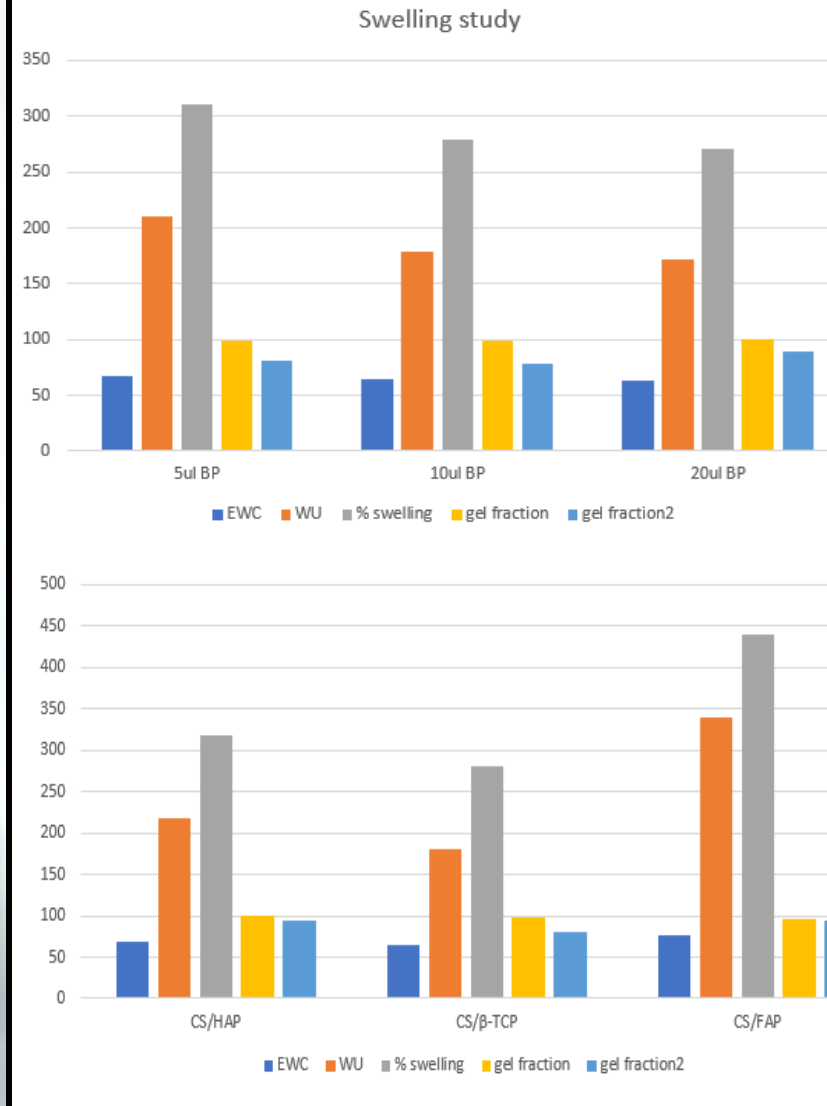
In the present work we studied the mechanical strength of the CS/HAp scaffolds crosslinked in the presence of benzophenone. It was found that the volume of benzophenone effects the cross-link reaction as evidenced by changes to the intensity of peaks in the FTIR spectra. MTT assay results demonstrated the scaffold to be non-toxic to cells.

Methodology and Results:

MTT assay: Cytotoxicity of scaffolds was evaluated by MTT assay using an indirect method.

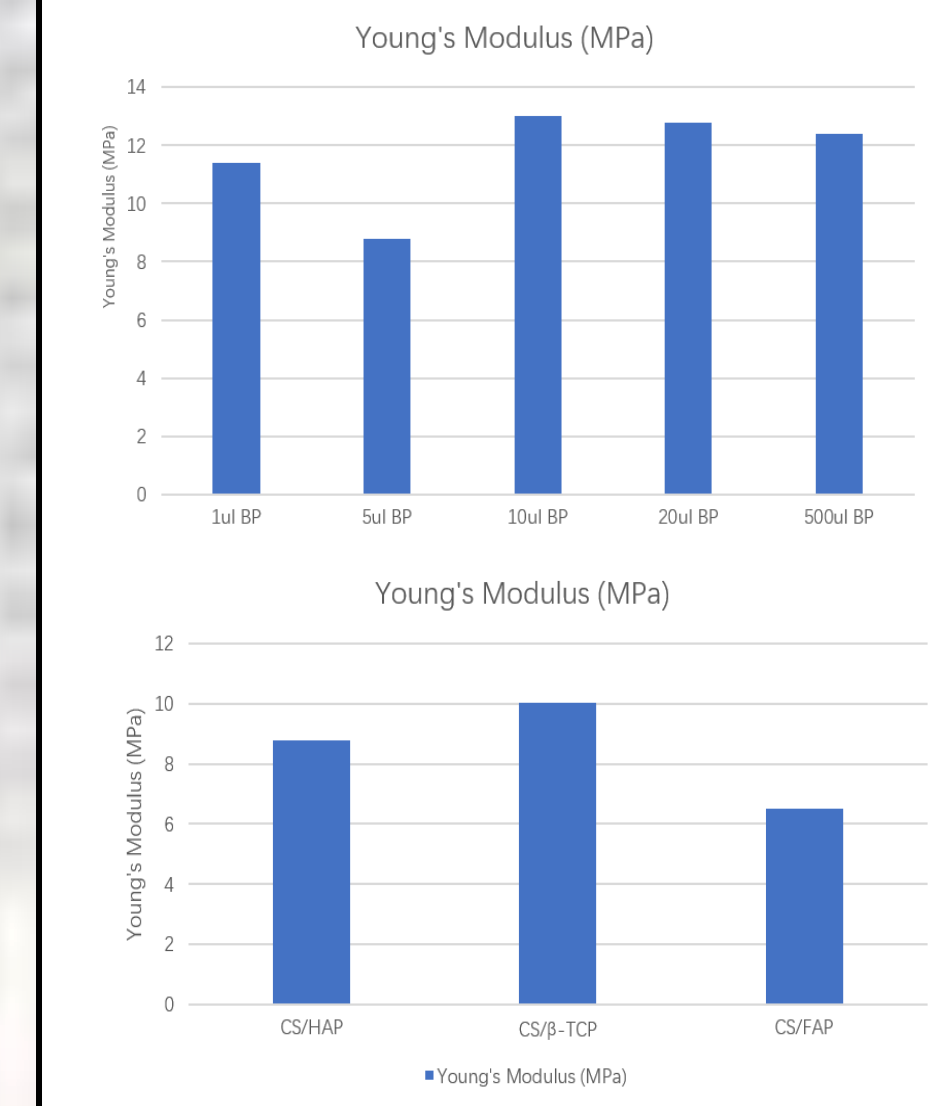


Swelling study:



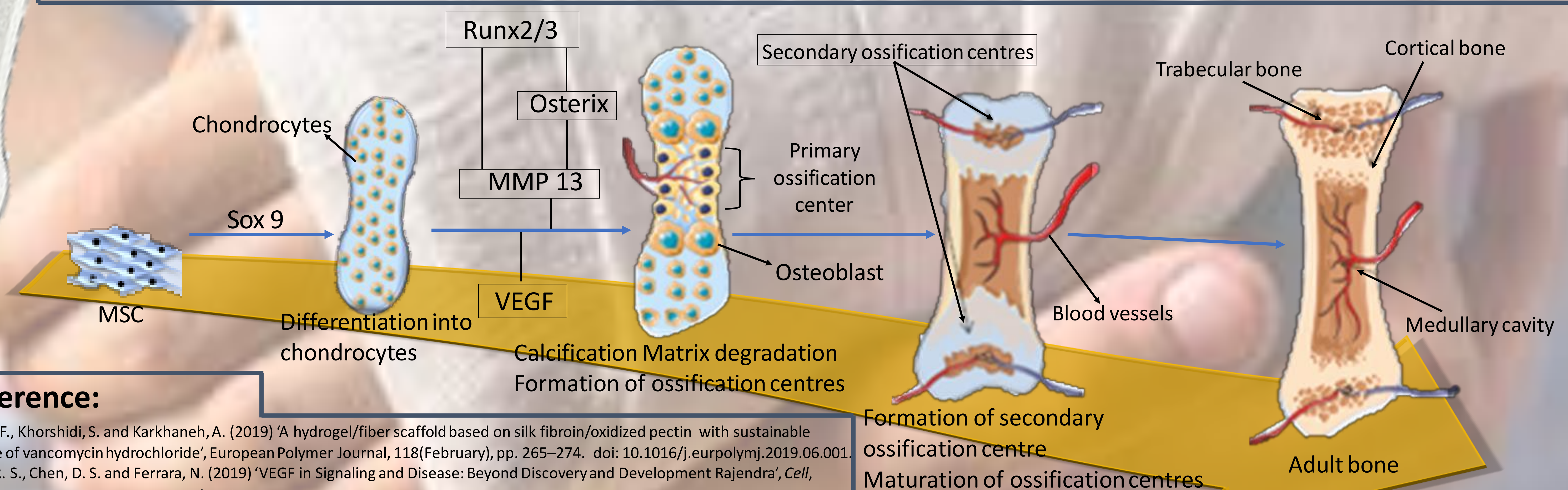
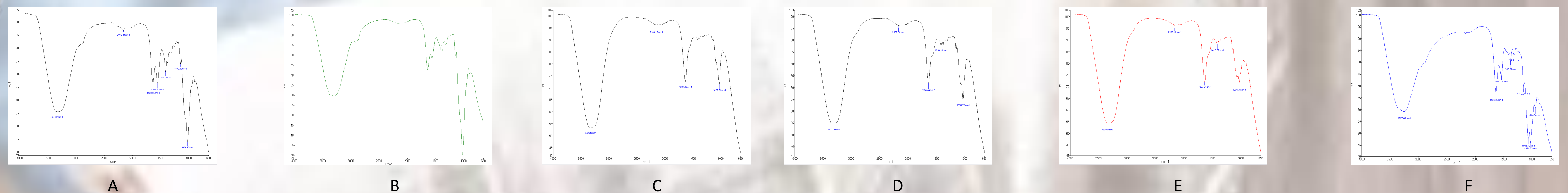
Swelling behaviour is an intrinsic property of hydrogels, where the nanogels enlarge due to solvent penetration into the void space between the polymeric chain network.

Compression test:



The mechanical properties of different composites will be assessed using compression testing.

FT-IR: FT-IR analysis indicates the presence of CS and HAp in the scaffolds.



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