Porous Scaffolds Fabricated by Leaching Method: Effect of Porogens

Adisak Khrutmongkhol

Chach Sungchei

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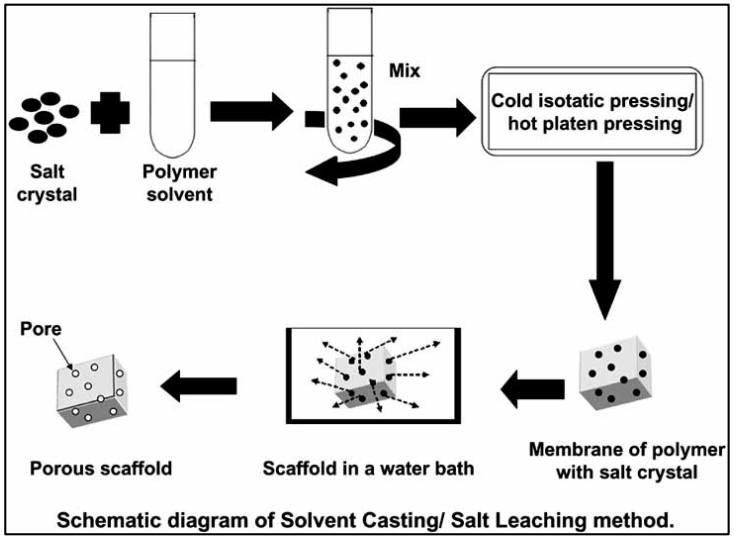
Dr.-Ing Patcharakamon Nooeaid

Polymer materials technology, Agricultural Product Innovation and Technology, Srinakharinwirot University

Introduction

Porogen leaching method ?

Any of a mass of particles, of a specified shape and size, used to make pores in moulded structures used for tissue engineering

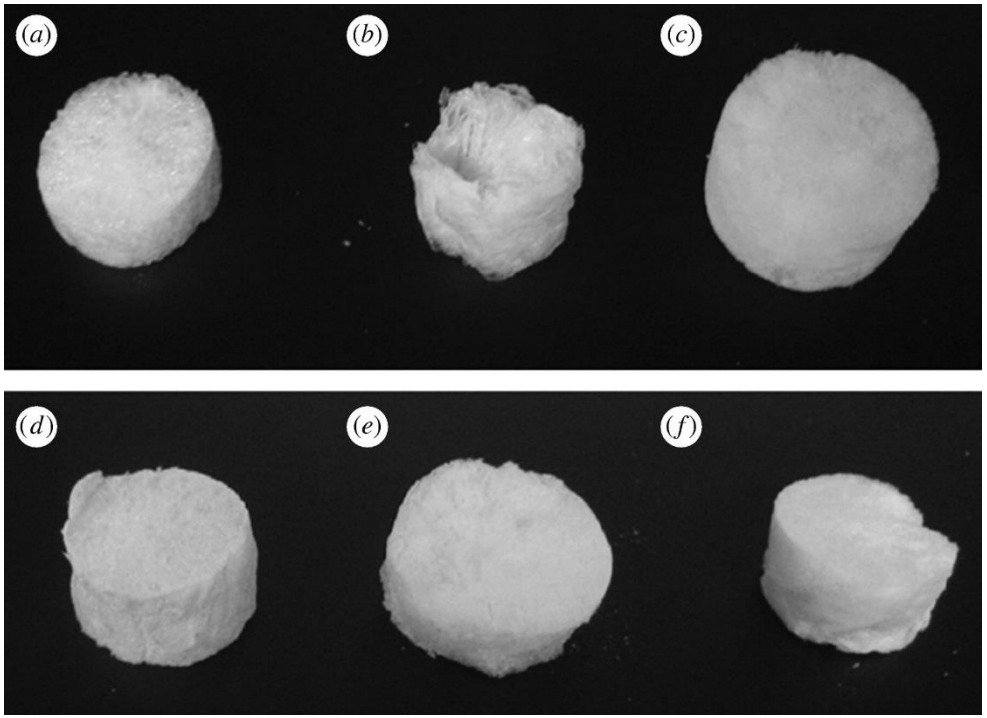


https://www.researchgate.net/figure/228852050_fig4_Fig-4-Schematic-diagram-of-solvent-casting-salt-Leaching-method

Several requirements should be considered in the design of 3D scaffolds for bone tissue engineering:

Tissue Engineering Scaffolds

- High interconnected porosity
- Sufficient mechanical properties
- Non-toxicity
- Biocompatibility
- Osteoconductivity



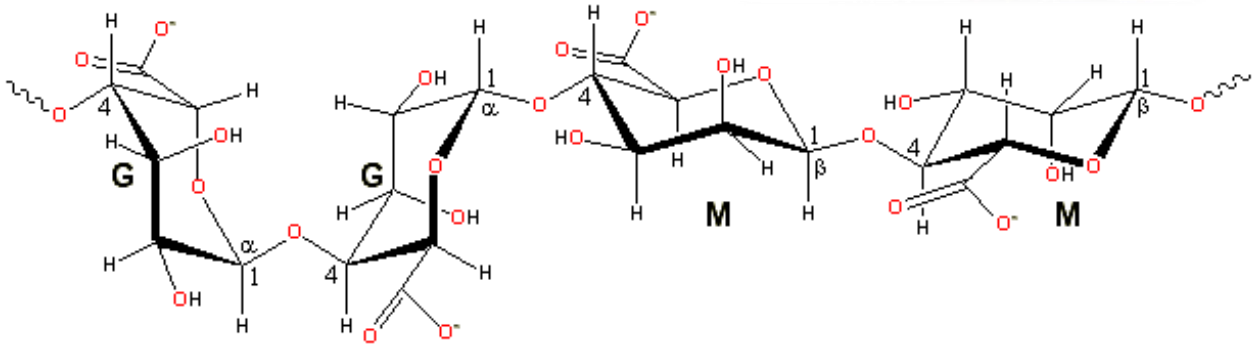
http://rsta.royalsocietypublishing.org/content/roypta/368/1917/1981/F4.large.jpg

Objective Research

- To prepare porous alginate scaffold by leaching method
- To study the effect of different porogens (sugar powder, brown sugar powder and sugar cube) on the porous structure
- To characterize physico-chemical properties of the prepared scaffolds

Alginate

- most popular biomaterials
- Gel base
- Non-toxic
- biocompatibility



http://www1.lsbu.ac.uk/water/alginate.html

Sugar

Granulated sugar
&
Sugar cubes

Use as porogen agent to create porosity of scaffolds

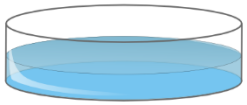
Leaching Method :Alginate Scaffold

1

prepare alginate 3% w/v

2

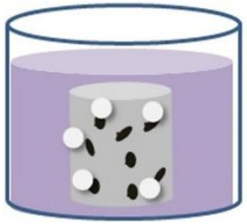
Mix White sugar or Brown sugar or Sugar cubes



3

Freeze in 4 °C 3 hr.

4



crosslinking with CaCl2 1.5% w/v

5

Freeze in 4°C overnight

freeze-dried

at -40 °C 36 hr.

6

Sample of scaffolds

Scaffold by sugar cube

Scaffold by brown sugar

Scaffold by white sugar

Conclusion

Fabrication porous scaffolds by sugar leaching method, it is possible to Fabrication but sample Still in testing phase ability to work.

PLAN OF TESTING

1. • Morphological observation (SEM analysis)
2. • Fourier Transform infrared spectroscopy (FTIR analysis)
3. • Mechanical tests
4. • Swelling ratio and water uptake

Thank you for Attention