

Resorbable Surgical Mesh Impregnated with Calcium Peroxide

Calcium peroxide mesh that supports dermal wound healing and prevents hypoxia.

Researchers at Purdue University have developed a new resorbable surgical mesh that is impregnated with calcium peroxide for regeneration of tissue at dermal wound sites. Surgical mesh is used to prevent bacteria and carry oxygen, especially for surgical wound sites however, current mesh technologies are often expensive and can lead to long-term post-surgical complications such as adverse bodily response to a foreign object. Purdue researchers introduce a new solvent-free, cost-efficient, scalable process for making strong, flexible, biodegradable surgical mesh. This approach has been tested with various compositions of calcium peroxide on polymer fibers to develop a mesh with optimal porosity, verified by scanning electron microscopy (SEM), which allows for excellent oxygen permeability. The new mesh was cultured with HMS-32 skin cells in vitro, exhibiting 90-92% cell viability as well as having ability to prevent necrosis by reducing hypoxia-induced cell death within six days.

Advantages:

- Biodegradable
- Strong
- Flexible
- Reduced Hypoxia Induced Cell Death
- High Cell Viability

Potential Applications:

- Surgical Mesh
- Hernia Surgical Mesh
- Stress Incontinence-Urologic/Gynecologic Applications

Technology ID

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Category

Materials Science &
Nanotechnology/Biomedical &
Bioinspired Materials
Digital Health &
Medtech/Implantable Medical
Devices

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Technology Validation:

In vitro skin cell culture with new mesh, tested in lab to determine best manufacturing technique, and shows 90-92% cell viability as well as higher oxygen permeability and less hypoxia induced cell death at surgical wound sites.

Recent Publication:

"Wearable, portable invention offers options for treating antibiotic-resistant infections, wounds"

Purdue Research Foundation News

<https://www.purdue.edu/newsroom/releases/2020/Q3/wearable,-portable-invention-offers-options-for-treating-antibiotic-resistant-infections,-wounds.html>

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Intellectual Property:

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