



- *Patenting and Technology Transfer*

The Biomedical Research Section applied for a patent for the honey alginate wound dressing in 2012.

PNRI is ready for collaboration and linkages in preparation for future collaboration and/or technology transfer of the product.

- *Properties of the Radiation-Sterilized Honey Alginate Wound Dressing*

- ◆ Highly absorbent and non-adherent to wound bed
- ◆ Moisture and vapor permeable
- ◆ Low pH content
- ◆ Promotes Healing of wounds like pressure sores, burns, skin lesions and leg ulcers
- ◆ Gamma-Irradiated for Sterility



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Radiation-Sterilized Honey Alginate Wound Dressing for Exudating Wounds and Burns

Problem

Commercial wound dressings have long since proven effective for antimicrobial and anti-inflammatory applications for exudating wounds and burns. However, the high price of dressings, made even worse by inflation and other economic factors, make it difficult for more indigent families to afford them.



Outcomes

- *Honey Alginate Wound Dressing for Exudating Wounds and Burns*

The PNRI Biomedical Research Section has developed an effective alternative in the form of a wound dressing made from local honey and alginate with comparable wound healing properties.

Sodium alginate made from brown algae, already used by hospitals for dressings, serves as a base for the honey. They are mixed and molded into a gauze. After being cured, dried and packaged in vacuum-packed aluminum foil, the dressing is irradiated at 25 kilogray at PNRI's Multipurpose Irradiation Facility to keep it microbe-free and longer-lasting.

Strategies

- *Local Honey*

Honey is ideal as a wound dressing for its antimicrobial and potentially anti-inflammatory properties. Used since ancient times for medicinal purposes, its composition makes it a very effective agent for healing wounds.

- *Alginate*

Alginate is a hydrophilic polymer from natural polysaccharides. Mixed sodium/calcium alginate absorbs water and swells to form a gel. Incorporating alginate to the dressing allows the wound fluid to be absorbed.

- *Sugar Content and Low pH Level for Faster Healing*

Honey's sugar content helps in the granulation of wounds, while its low pH speeds up the healing process.

- *Radiation Sterilization from Gamma Irradiation*

PNRI scientists are able to extend the shelf-life of the wound dressing with gamma irradiation, which sterilizes the honey wound dressing.

Action

- *Physicochemical and Microbiological Tests*

The gamma-sterilized honey alginate wound dressing has properties that make it ideal as wound dressing like low pH, low moisture

content, high absorbency and swelling and good permeability

Sterility Tests showed that the product showed no viable microorganisms after exposure to irradiation dose of 25 KGy.

- *Initial and Pre-Clinical Testing*

Results from initial tests in mice and rabbits showed that the healing rate of the wound dressing is comparable to the use of topical antibiotics.

Pre-clinical testing conducted in various cases of exudating wounds like burns and pressure sores showed complete healing of wounds using the dressing.



A case of scald burn treated with honey alginate wound dressing completely healed after three weeks



Preparation of Radiation-Sterilized Honey Alginate Wound Dressing