



**Pilot plant for
the production of
PVP-carrageenan
hydrogel dressing**

SEMI-COMMERCIALIZATION

Semi-commercialization activities for the PVP-carrageenan hydrogel are being undertaken by the PNRI, in partnership with an investor, to fasttrack the commercialization process of this product. The PNRI has undertaken the first phase of the semi-commercialization project which was funded by the Technology Incubation for Commercialization (TECHNICOM), a technology transfer program of the Department of Science and Technology.

The pilot plant and equipment has been set up in the PNRI premises with a lot area of 60 square meters. The estimated capacity of the plant was determined in the initial trial production. The production of hydrogel was estimated to be 1,000 pieces for 8" x 8" or 4,000 pieces for 4" x 4" per day on 8 hours a day work.

**READY FOR
COMMERCIALIZATION**

For more information on the PVP-Carrageenan Hydrogel dressing, please write or call:

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PVP-Carrageenan Hydrogel Dressing

**FOR BURNS, WOUNDS
& BEDSORES**

**READY FOR
COMMERCIALIZATION**



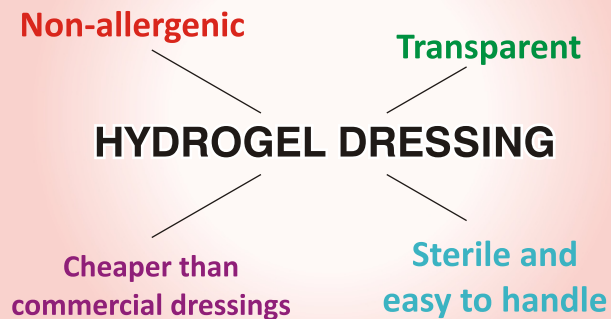
THE POLYVINYL PYRROLIDONE (PVP) CARRAGEENAN HYDROGEL DRESSING

- Can be used as dressing for burns, wounds and bedsores
- Fully permanent gel in a form of transparent sheet, 3 to 4 mm thick, containing over 90% of water
- Made from polyvinyl pyrrolidone, a water soluble polymer, and carrageenan, a seaweed polysaccharide
- Radiation-processed to effect crosslinking and to sterilize the product in its final packaged form



Eucheuma seaweed

MERITS OF THE PNRI-DEVELOPED HYDROGELS



PERFORMANCE OF PNRI-DEVELOPED HYDROGELS

Clinical tests of the PNRI-developed hydrogels were comparable with commercially available imported hydrocolloids for burn dressings. The tests also showed that the hydrogels are much better than the saline gauze dressing in Decubitus ulcers (bedsores).

MARKET DEMAND FOR PVP-CARRAGEENAN HYDROGEL

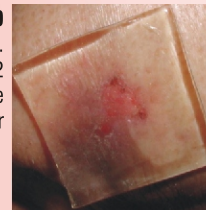
- Initial target market are burn patients from three main government hospitals; burn patients are estimated to increase at 3% per year
- Higher demand expected when applied to bedsores and wounds

AWARDS

- The PVP-Carrageenan Hydrogel was awarded 1st place in the First Aquatic Technology Competition launched by the Philippine Council for Aquatic and Marine Research and Development in January 2006.
- Awarded 2nd place at the LIKHA Award for Creative Research in Health, Education and Entertainment in the Government Sector, 2002.

Clinical testing of PVP-Carrageenan Hydrogel (Bed Sores)

Day 0
1 cm. grade 2 ulcer of the left shoulder



Day 4
Wound is dry and well epithelialized



COMPETITIVE EDGE OF THE PVP-CARRAGEENAN HYDROGEL

- Abundance and availability of carrageenan as raw material
- Crosslinking and sterilization through radiation technology eliminates the use of toxic chemicals
- Projected price is cheaper than other commercial dressings presently available in the market
- Good physical and mechanical properties: soft, non-allergenic, elastic but mechanically strong

STAGES OF PRODUCTION OF PVP-CARRAGEENAN HYDROGEL DRESSING

The stages of production of hydrogel dressings are the following:

Preparation of the mixture. Aqueous solution of dressing components is prepared. A combination of synthetic and natural polymers is a usual case.

Confectioning. The molds, which are also used as final packages for the ready-made dressings, are filled with the solution to the required depth.

Irradiation. The products are assembled in commercial packages and are treated with ionizing radiation at the Multipurpose Gamma Irradiation Facility of the Philippine Nuclear Research Institute. The radiation dose is sufficient to sterilize the material and provide the formation of a stable three-dimensional network that allows water to penetrate into the structure to a certain volume without destroying its shape.



Irradiation cell inside the Multipurpose Gamma Irradiation Facility