
Evidence Summary: Wound Management Low Resource Communities — Potato Peel Dressings

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QUESTION

What is the best available evidence regarding sterile potato peel dressings for wound management?

CLINICAL BOTTOM LINE

Potato peel dressings (PPD) provide a low cost, traditional wound dressing option for the management of several types of wounds.¹⁻³ Sterile potato peel dressings provide a moist wound healing environment in which desiccation of the wound surface is prevented by a cork like layer in the peel, and optimal epithelial regeneration can occur.^{1, 2, 4} Preparation and use of the PPD have been reported in India, where its feasibility as a low resource wound care product is acknowledged.^{1-3, 5}

TYPES OF WOUNDS

Evidence is available on the contribution of PPD to the management of the following conditions:

Burns

- Partial thickness burns (resulting from scalds; high temperature contact and flame burns; and explosive and chemical burns) covering no more than 40% of total body area in patients aged from 11 months to 59 years.^{5,7} (Levels of evidence 2c, 3e, 1c, respectively)

Dermatological conditions

- Pemphigus vulgaris and bullous pemphigoid resistant to systemic steroid therapy² (Level of evidence 4c)
- Toxic epidermal necrolysis² (Level of evidence 4c)

Others

- Necrotising fasciitis when used as adjunct daily wound dressings in conjunction with IV antibiotics.³ (Level of evidence 4d)

The use of PPD in the management of other types of wounds has not been reported.

EFFECTIVENESS IN PROMOTING A HEALING ENVIRONMENT

- In a split-body randomised controlled trial (RCT), 50 burns treated with PPD that were changed on alternate days achieved healthy granulation in a mean of 9.2 days and total healing within a mean of 16.2 days (range 7 to 21 days). Healing, however, was significantly slower than that achieved in burns treated with unprocessed, undiluted honey ($p < 0.001$).⁷ (Level 1c evidence)
- In one non-randomised, controlled trial (N=17) histological examination of wound biopsies were taken on admission, at three time-points (days 4, 8 & 15) during healing and after complete healing. Burns covered with PPD showed a decrease in inflammation, more orderly cellular stratification and faster epidermal regeneration compared with burns covered with gauze dressing at

each of the post injury time points listed.⁶ (Level 3e evidence).

- A second split-body trial (N=30) reported total wound healing for partial thickness burns managed with povidone iodine ointment and PPD had occurred within 10 days for the majority of participants. There was no significant difference in healing rates compared to banana leaf dressings.⁵ (Level 2c evidence)
- One case report of a partial thickness burn in a young child detailed faster time to complete healing with PPD compared to petroleum gauze (7 days versus 10 days).¹ (Level 4c evidence) The researchers reported that the results in patients in the same study with deep superficial and full thickness burns or late granulating burns were “not so convincing” (no data reported).
- Effectiveness of PPD to promote healing in partial thickness burns has been reported when treatment is administered both promptly (within 6 hours) and in cases where health care assistance was delayed (up to 7 days after sustaining burn).⁶ (Level 3e evidence)
- A case study on the use of PPD as an easily accessible, culturally acceptable and cheap adjunct treatment for necrotising fasciitis to support aggressive debridement and intravenous broad spectrum antibiotic administration reported rapid formation of healthy granulation tissue and good marginal healing (dimension of wound reduced from 15 cubic inches to 1.5 cubic inches in one week). The wound healed without skin grafting.³ (Level 4d evidence)
- In a descriptive study involving 11 patients with various types of wounds resulting from skin conditions (superficial to full thickness) and 25 sites with a PPD, complete epithelisation occurred in 80% of the sites, with a mean duration of healing for superficial wounds of one week (range of 4–10 days) and three weeks (range of 14–28 days) for deep wounds.² (Level 4c evidence)
- Following a rapid systematic review of three of the studies above,⁵⁻⁷ the authors concluded that “There was no evidence to suggest that potato peel is effective as a burns dressing in the acute phase. Sterile potato peel dressings are better than gauze alone during the healing phase.”^{8, p.55} (Level 1b evidence)

EFFECTIVENESS IN PREVENTING INFECTION

- In one non-randomised, controlled trial (N=17) microbiology of wound swabs established no significant differences in the type or level of bacterial contamination in partial thickness burns treated with PPD compared with gauze dressing. Wound swabs were taken on admission, at three time-points during healing and after complete healing. Silver sulphadiazine cream was applied underneath both dressings.⁶ (Level 3e evidence).

- One RCT found that no burns with bacterial colonisation treated with a PPD were cleared of microorganisms within seven days of treatment.⁷ (Level 1c evidence).
- In the study² on the use of PPD with a thin layer of antiseptic cream for skin conditions in which large areas of skin loss had occurred, no secondary infections occurred. (Level 4c evidence)

EFFECTIVENESS IN MANAGING PAIN

- In a split-body controlled trial that evaluated pain during dressing changes, 90% of patients (N=30) classified pain during PPD changes as tolerable. This compared to 93% classifying banana leaf dressing changes as tolerable ($p =$ not significant). Experience of pain may have been related to the order in which the dressings were removed; however this was not reported.⁵ (Level 2c evidence)
- In the same trial, 81% of patients described PPD as comfortable to wear and 19% reported minor discomfort ('prickly' as potato peel edges harden). There was no significant difference in comfort ratings compared to banana leaf dressings.⁵ (Level 2c evidence)

CONTRAINDICATIONS AND SIDE EFFECTS

Trials investigating the use of potato peel dressings reported that no signs of allergy or other side effects were observed in any participants.^{1, 5-7} (Levels 4c, 2c, 3e, & 1c evidence respectively)

OTHER FACTORS FOR CONSIDERATION

The following factors should be considered:

- **Cost:** Potato peel dressing was reported to be 14 times cheaper than impregnated gauze and 468 times cheaper than a biosynthetic dressing but 11 times more expensive than banana leaf dressings in India in 2003.⁵
- **Preparation and application:** In one non-randomised trial, 100% of health care professionals preparing and applying PPD rated its handling as easy (scale=easy or difficult).⁵
- **Availability and resources:** Availability of potatoes and resources to prepare and store PPD is an important consideration. Boiling potatoes solely for their peel is reported to be uneconomical.⁹

CHARACTERISTICS OF THE EVIDENCE

This evidence summary is based on a structured search of the literature and selected evidence-based health care databases (including developing country journals) combining search terms that describe wound management and potato peel dressings.

The evidence in this summary comes from:

- One rapid systematic review⁸
- One randomised, controlled trial in which blinding was not reported.⁷
- Two quasi-experimental, prospectively controlled studies^{5,6}
- Two case series^{1,2}
- One case study³
- Expert consensus⁹
- In-vivo laboratory study⁴

BEST PRACTICE RECOMMENDATIONS

- Potato peel dressings offer a low cost dressing option for partial thickness burns in settings where there is limited or no access to skin grafting. (Grade B). (An alternative low-cost dressing option is banana leaf dressings.) There is no sound evidence to support the use of potato peel dressings in deep partial thickness and full thickness burns or late granulating burns.
- Potato peel dressings can be considered for use for conditions in which large areas of skin loss have occurred when contemporary dressings are unavailable. (Grade B)
- There is no published evidence to support the use of potato peel dressings in chronic wounds, including venous leg ulcers. Other dressings should be preferred for chronic wounds.
- Potato peel dressings alone are not effective in reducing bacterial infection in partial thickness burns. (Grade B).
- Potato peel dressings may reduce pain associated with dressing changes and are reported by patients to be comfortable to wear. (Grade B).

KEYWORDS

Wound care; burns, skin conditions, low cost, traditional, potato peel dressing.

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[Note: Vlachojannis J, Cameron M, Chrubasik S. Medicinal use of potato-based products: a systematic review. *Phytotherapy Res*. 2010;24:159–162 has not been included as it only contained one study on the use of potato peel dressing in burns and that RCT has been included in this Evidence summary — Ref 7

Letter to Editor re above review: Van de Veld S, De Buck E, Dieltjens T, Aertgeerts B. Medicinal use of potato-derived products: conclusions of a rapid versus full systematic review. *Phytother Res*. 2011;25: 787–788.]