

WHAM evidence summary: Potato Peel Dressings

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CLINICAL QUESTION

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

KEYWORDS

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

CLINICAL PRACTICE RECOMMENDATIONS

All recommendations should be applied with consideration to the wound, the person, the health professional and the clinical context.

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).

SOURCES OF EVIDENCE: SEARCH AND APPRAISAL

This summary was conducted using methods published by the Joanna Briggs Institute.¹⁻³ 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. Searches were limited to studies published up to May 2017 in English. Retrieved studies were appraised for relevance and rigour using Joanna Briggs Institute critical appraisal tools. Levels of evidence for intervention studies are reported in Table 1.

Table 1: Sources of evidence and the level

Level 1 Evidence	Level 2 Evidence	Level 3 Evidence	Level 4 Evidence	Level 5 Evidence
Experimental Designs	Quasi-experimental Designs	Observational – Analytic Designs	Observational – Descriptive Studies	Expert Opinion/ Bench Research
1.a Systematic review ⁸ 1.c RCT ⁷	2.c Prospectively controlled studies ^{5,6}	None	4.c Case series ^{1,2} 4.d Case study ³	5.b Expert consensus ⁹ 5.c <i>In-vitro</i> laboratory study ⁴

BACKGROUND

Potato peel dressings (PPD) provide a low cost, traditional wound dressing option for the management of several types of wounds.⁴⁻⁶ 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.^{4,5,7} Preparation and use of the PPD have been reported in India, where its feasibility as a low resource wound care product is acknowledged.^{4-6, 8}

CLINICAL EVIDENCE

Types of wounds

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

- 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^{8,10} (Levels 1, 2 & 3).
- Pemphigus vulgaris and bullous pemphigoid resistant to systemic steroid therapy⁵ (Level 4).
- Toxic epidermal necrolysis⁵ (Level 4).
- Necrotising fasciitis when used as adjunct daily wound dressings in conjunction with IV antibiotics⁶ (Level 4).

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 ($p < 0.001$)¹⁰ (Level 1).
- 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 listed⁹ (Level 3).

- 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 dressings⁸ (Level 2).
- 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)⁴ (Level 4). 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)⁹ (Level 3).
- 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 grafting⁶ (Level 4).
- 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.⁵ (Level 4).
- Following a rapid systematic review of three of the studies above,⁸⁻¹⁰ 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.”^{11, p.55} (Level 1).

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 dressings⁹ (*Level 3*).
- One RCT found that no burns with bacterial colonisation treated with a PPD were cleared of microorganisms within seven days of treatment.¹⁰ (*Level 1*).
- In the study⁵ 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 4*).

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 reported⁸ (*Level 2*).
- 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 dressings⁸ (*Level 2*).

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.^{4,8-10} (*Levels 1, 2, 3, & 4*).

CONSIDERATIONS FOR USE

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 2003.⁸

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).⁸

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.¹²

CONFLICTS OF INTEREST

The author declares no conflicts of interest in accordance with International Committee of Medical Journal Editors (ICMJE) standards.

ABOUT WHAM EVIDENCE SUMMARIES

WHAM evidence summaries are consistent with methodology published in

Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach, *Worldviews Evid Based Nurs.* 2015;12(3):131-8.

Methods are provided in detail in resources published by the Joanna Briggs Institute as cited in this evidence summary. WHAM evidence summaries undergo peer-review by an international review panel. More information on the website: <http://WHAMwounds.com>.

WHAM evidence summaries provide a summary of the best available evidence on specific topics and make suggestions that can be used to inform clinical practice. Evidence contained within this summary should be evaluated by appropriately trained professionals with expertise in wound prevention and management, and the evidence should be considered in the context of the individual, the professional, the clinical setting and other relevant clinical information.

PUBLICATION

This evidence summary has been published in *Wound Practice and Research*:

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management low resource communities – Potato peel dressing. *Wound Practice and Research*, 2017;25 (3):154-5.

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