

## Anti-infective effects of sugar-vaseline mixture on leg ulcers

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### Abstract

Fifty patients affected of resistant leg ulcers where treated exclusively with a vaseline-glucose mixture in combination with an etiologic treatment. Neither additional topical, systemic anti-infective drugs nor surgical debridement were applied. The dressing turnover rate was 6-7 days. A first bacteriological sampling was followed by a second one (40 days mean), which showed 100% sterilized ulcers. A complete scaring was achieved in 46 (92%) on average of 109 days of apply. This efficient, low cost, painless and quick treatment could be proposed as a first line option.

### Introduction

Leg ulcers are chronic wounds due to various causes (trauma, ischemia, venous hypertension, etc.) that do not heal within a normal period. Their healing depends not only on the etiologic but also anti-infective treatment because they are usually worsened and prolonged by superinfections. For that reason, in the presence of fungal or bacterial infections, an appropriate anti-infective therapy is recommended. It consists of systemic and/or topical anti-infective therapies combined with or without surgical debridement. The anti-infective efficiency of the sugar is known.<sup>1-6</sup> The anti-infective effect and scaring acceleration achieved by a specific mixture of glucose and vaseline without any additional anti-infective drugs or surgical debridement was studied in resistant leg ulcers.

### Materials and Methods

#### Patients

Mono centric open-label trial including 50 patients, female (n=32), male (n=18) mean age=65 years presenting leg ulcers not healed since more than 180 days of treatment in other care units.

These patients were affected of various pathologies as traumatic, cardiac failure, venous insufficiency, lymph edema, ID and NO ID diabetes and treated with insulin, oral hypoglycemic, anticoagulants, antiplatelet drugs.

They all were assessed with arterial, venous and lymphatic duplex ultrasounds in order to diagnose the vascular etiology of their ulcers then treat it specifically.

In all patients a first swab bacteriological assessment at bottom line, then a second one within 30 to 60 days (mean=40 days) were performed (Table 1).

#### Treatment

The treatment was applied in an ambulatory care unit and at home.

A soft cleaning of the wound and necrotic debris was performed with neutral detergent as tap water. No surgical debridement was carried out.<sup>7</sup>

The dressing was applied over all the area of the ulcer. It was made of mixture of Glucose 60% and Vaseline 40% supported by pads (Figure 1). Vaseline was in 40% proportion in order to hold in place the glucose powder on the wound thanks to an adequate consistency of the mixture as well as providing a high concentration of glucose. Neither topical nor systemic antibiotics whatever the antibiogram result were applied.<sup>8</sup> Neither foam nor any autolytic debriding materials were used whatever the moisture of the wound.<sup>9</sup> The bandaging tightness was performed according to the etiology. The dressing turnover was once every 6-7 days.

### Results

In Table 1 the bacteria assessed by pre-treatment swab assessment are given. All the ulcers were germ free at second sampling culture: 50/50 (100%). No pain, no side effects nor complication was noticed except some irritation of the surrounding skin. Surprisingly, no more bad smell was noticed when removing the dressing. The completely rate of healed ulcers was n=46 (92%). The healing time mean was 109 days (range: 36-182 days). Not healed but

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improved ulcers were n=4 (8%). Details are given in Table 2.

### Discussion

The results regarding the anti-infective effect of sugar on wounds confirms many previous studies.<sup>1-5</sup> A study has shown that sugar gave less good results than natural brown sugar.<sup>11</sup> Nevertheless, the glucose was 60% in the mix while it is quite absent in refined and natural brown sugar made respectively of 99.8 and 95% of sucrose.

**Table 1. Germs identified at the first sampling.**

Bottom line culture	No.
<i>Proteus mirabilis</i>	2
<i>Staphylococcus aureus</i>	14
<i>Escherichia coli</i>	9
<i>Citrobacter freundii</i>	3
<i>Staphylococcus epidermidis</i>	11
<i>Candida albicans</i>	3
<i>Streptococcus faecalis</i>	7
<i>Pseudomonas aeruginosa</i>	1

**Table 2. Not healed ulcers rate.**

Not healed but improved ulcers at 182 days	4 (8%)
Ulcer associated with osteomyelitis	1
Deep traumatic wound	1
Ulcer associated with diabetes and neuropathy	1
Arterio-venous mixed ulcer	1



**Figure 1.** Gauze compresses with a covering of Vaseline-glucose powder mix are applied on the ulcer before bandaging.

The honey also is different from the Vaseline-glucose mix because it contains Fructose: 38.2%, Glucose: 31.3%, Maltose: 7.1%, Sucrose: 1.3%.<sup>11</sup> The healing time of the ulcers is more difficult to relate to the mixture alone because it depends also on the etiological treatment efficiency. So, the inefficiency of the previous treatments (ulcers lasting for more than 6 months) was not necessarily due to the superinfection but maybe to an inadequate etiological treatment. The venous ulcers were treated with compression and/or deep CHIVA,<sup>12</sup> superficial CHIVA,<sup>13</sup> according to their hemodynamic configuration. Nevertheless, this study provides some news. The first one is the anti-infective efficiency of the vaseline-glucose mixture alone without antiseptics or antibiotics (topical or systemic). The second one is the efficiency of a single dressing whatever the moisture content. The third one is that contrary to the honey, the vaseline-glucose mix is not allergenic and its consistency, composition and glucose percentage are constant. The fourth one is the absence of debridement, which not only

permits a painless change of dressing but also leaves in place the new cells and preserves their growth. The fifth is the low cost due to the cheap material and the only one-week frequency of the dressing change.

## Conclusions

The Vaseline-Glucose paste alone sterilizes the ulcers and promotes the healing when combined with the etiological treatment. Its low cost, efficiency, easy application could represent a first intention treatment. Further studies should be done in order to confirm these results but also to identify any other effect than anti-infective in the process of ulcer healing and scarring.

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