

VETSALVE[®]

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A new and unique
topical skin salve to
help support wound
management in dogs
and cats



VetPlus

A Global Leader in Veterinary Nutraceuticals

VETSALVE®

- not water soluble
- does not dissolve easily even in moist conditions, which can be helpful especially in wounds with a high level of exudate

VETSALVE® is a topical salve to help with the management of infected and non-infected, acute and chronic wounds and skin abrasions. It contains Norwegian spruce (*Picea abies*) resin, which is a natural ingredient that has proven healing benefits. The salve helps to form an occlusive layer on the skin and provides natural inhibiting influence against bacteria and certain fungi.

Wound Management

Depending on the situation, wounds can be healed by either primary or secondary intention. In primary healing the wound is closed by surgical method immediately, but in cases of extensive tissue loss, or contamination, this may not be possible, so secondary intention can be chosen, where granulation tissue forms and the wound closes by wound contraction and epithelialisation⁹. Various modes of management can be used including pharmaceuticals, topical therapies and dressings.



Types of Wounds

Wounds and skin scrapes are a common issue seen in veterinary practice, with a prevalence of 1.1% in dogs in the UK¹. Causes can include trauma, post-surgery, burns and underlying dermatological issues.

Acute wounds heal in a predictable time through the normal wound healing process, whereas with chronic wounds this process is delayed and cannot be predicted². Risk factors for these chronic wounds would be microbial contamination, systemic disease, or if the patient is on corticosteroids or other immunosuppressive medications³.

Normal Wound Healing

The process of wound healing can be broken down into three overlapping stages:

- inflammation
- proliferation
- remodelling or maturation

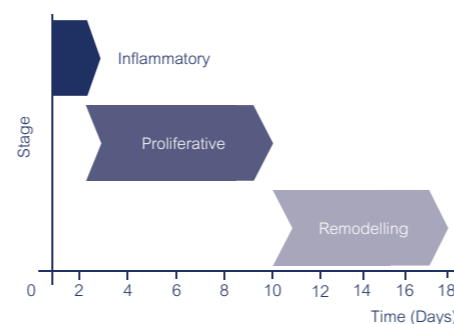
The inflammatory stage usually takes around 72 hours and begins with haemostasis; a transient vasoconstriction occurs for around 5-10 minutes to limit blood loss and platelets arrive at the site.

Platelets aggregate to form a platelet plug, followed by a fibrin clot, which completes haemostasis, as well as having antimicrobial effects and providing a matrix for cells.

Following this, vasodilation occurs, and increased vessel permeability leads to an influx of fluid to the wound site. This contributes to the typical inflammatory signs, such as redness, heat and swelling. After around 6 hours, neutrophils enter the wound to phagocytose pathogens and are followed 1-2 days later by macrophages, which play an important role in wound healing^{4,5}. The second

phase of proliferation starts after approximately 3 days and is made up of fibroblast, capillary, and epithelial stages. Fibroblasts move into the wound site to help the formation of new connective tissue; angiogenesis begins, and granulation tissue starts to build; epithelialisation occurs, where a single layer of epithelial cells migrates from the wound edge, to cover the wound. Wound contraction occurs as part of this stage and is visible 5 to 9 days after injury^{6,7}.

The final maturation stage of wound healing begins around 7-10 days after injury⁸. The wound increases in strength, as newly laid down collagen becomes organised over a period of time, which can take up to 2 years in some cases⁶. However, healed wounds do not reach the same tensile strength as the pre-injury tissue and are usually at only 70-80 %⁷ of their original strength.



Norwegian Spruce Resin

The naturally occurring resin is produced by conifers around 3-4 weeks after they undergo any kind of damage and is part of their natural defence mechanism. It is composed of various active ingredients including resin acids, terpenes and essential oils¹⁰.

Many in-vitro and in-vivo studies have shown the beneficial effects of this particular resin, which are thought to be due to its anti-microbial properties, including angiogenesis^{11,12,13,14,15}.

Antimicrobial Effects

In the European Pharmacopoeia challenge test, the resin was found to be bacteriostatic and fungistatic within seven days and effective against a series of pathogens including *Staphylococcus aureus*, MRSA, *E. coli*, *Pseudomonas aeruginosa* and *Candida albicans*¹¹. It has also been shown to cause changes in the bacterial cell wall and membrane and impair bacterial energy synthesis¹³.



Wound Healing Benefits

In one in-vitro study it helped to enhance epithelialisation and **significantly boost wound closure by up to 47 %**¹⁶.

It has also been studied on humans^{17,18} and was compared to a typical hydrocolloid control product for six months.

In people with pressure sores it was found to heal wounds significantly more than the control, with all ulcers healing in 92 % of the resin group, compared to 44 % in the control group¹⁷.

Studies in animal models have also been performed, one study in mice examined the effect of daily application of a major resin acid in the spruce resin and demonstrated accelerated closure, compared to a control group¹⁵.

Additionally, **VETSALVE®** has been used on many cases of complicated wounds in veterinary practices, having benefits in infected wounds and those with tissue loss (Figures 1 and 2).



Fig 1: **VETSALVE®** used postoperatively on an abdominal wound that became infected with MRSP for one week.

Fig 2: **VETSALVE®** used over a period of 4 weeks to aid in secondary intention healing.

VETSALVE®

How to use VETSALVE®

VETSALVE® is a topical skin salve for dogs and cats, available in a 20 ml tube. It should be applied using the following steps:

- 1 - clip the hair and clean the wound.
- 2 - apply sparingly (1-2mm) directly onto the wound. Apply a breathable dressing to the area if required.
- 3 - on deep wounds, apply directly to the wound bed.
- 4 - apply one to two times daily. The amount of wound exudate is often higher in the beginning of the wound healing process and reduces over-time. Once the amount of wound exudate reduces, apply once every other day.



VetPlus Ltd

'Animal House', Boundary Road,
Lytham, FY8 5LT. United Kingdom

Customer Services
0800 867 283

Fax
01253 797 409

E-mail
customer.services@vetplus.co.uk

Web
www.vetplusglobal.com

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