

## New antiviral spray dosage form for the treatment of ovine infections in breeding farms

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Viral infections are common in flocks and represent an economic burden for farmers. Orf virus is responsible for a highly contagious pustular dermatitis in sheep and goats, which occasionally can spread to humans. At present, no specific product is marketed to treat the infection.

This research aims to produce an innovative veterinary spray formulation containing an antiviral drug, cidofovir, along with a wound-healing agent, sucralfate gel. The spray formulation is suitable to rapidly treat many animals directly in the field.



### 1. Description of the product

Orf virus causes a contagious skin infection in breeding sheep and goats, but also in humans. Previous studies in experimentally infected lambs showed that topical treatment with a cream containing the antiviral drug cidofovir leads to quick resolution of skin lesions. However, the feasibility of the application on the field is hindered by the difficulty to individually treat a large number of animals with conventional semisolid formulations (creams, ointments). Hence, a bioadhesive spray dosage form made with sucralfate gel is a suitable vehicle for cidofovir delivery to animals. The formulation, prepared by simply dissolving cidofovir within the sucralfate gel suspension, couples the antiviral activity of cidofovir to the wound-healing properties of sucralfate.

### 2. Innovative aspect of the product

In experimentally infected lambs the topical treatment with a semisolid formulation (cream) containing 1% w/w cidofovir proved to be effective in healing skin lesions caused by orf virus. However, in breeding animals conventional semisolid formulations are unsuitable for individually treating large numbers of animals. This bioadhesive spray dosage form for veterinary use contains cidofovir dissolved within a sucralfate gel suspension. Sucralfate gel is a suitable vehicle, since it exhibits colloidal properties and allows to prepare stable suspensions that are bioadhesive to the mucosa. In fact, the suspension itself is fluid enough to be directly sprayed on animal lesions and strongly adhere to skin and mucosae. The sprayed product forms a layer on the lesion that then dries quickly leading to a protective crust.

### 3. Main advantages of the offer

Worldwide, the industrial application of the project can provide farmers with a drug product suitable for the treatment of dermal or buccal viral infections in sheep and goats. At present, no such product is available on the market to counteract a veterinary disease responsible of significant economic loss due to its impact on the agricultural sector as well as on public health.

The advantages expected by its industrial application are:

1. Easy and economic manufacturing procedure;
2. Combination of antiviral and wound-healing effects;
3. Spray delivery of the formulation suitable for extensive use in farms and to treat large number of breeding animals.

### 4. Technology key words

Veterinary drug delivery, antiviral, wound-healing, cidofovir, sucralfate gel, spray.

### 5. Current Stage of Development

Clinically tested on infected lambs.

The formula has been optimized for use with both pressurized and non pressurized spraying devices.

### 6. Intellectual Property Rights

The antiviral and the wound-healing drug are covered for their respective applications by international patents.

## Technical and scientific publications

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