



**kINPen® VET**

**Cold Atmospheric Pressure Plasma (CAP) in Veterinary Medicine**

- Antimicrobial wound treatment without antibiotics
- Quick and pain-free without sedation
- Simple, compact and portable
- Accepted well by patients and practice staff

**kINPen® VET**

**FAQ's – The 10 Most Important Questions And Answers**

INNOVATIVE WOUND TREATMENT WITH COLD PLASMA

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### **What Is Cold Plasma?**

Plasma is seen as the fourth fundamental state of matter after solid, liquid and gas. A plasma is an excited (ionised) gas and contains ions and electrons, free radicals, light, thermal and UV radiation and electromagnetic fields.

### **How Does Cold Plasma Work?**

The combination of the plasma components named above creates an antibacterial (also against multiple drug resistant infections), antiviral, antifungal and anti-inflammatory effect on the surface of the wound. At the same time, plasma activates the immune system and supports the wound healing through cellular stimulation, whilst only causing minimum creation of scar tissue. The ability of the plasma to penetrate cracks allows good access to deep and hidden wounded areas such as caverns, cavities and hair follicles.

### **Which Indications Justify Treatment with Cold Plasma?**

Documented therapy success has been seen in particular for chronic wounds and wound healing disorders such as wound dehiscence, necrosis or emergence of a seroma and in the destruction of multiresistant bacteria. Hotspots, mycosis and pyoderma can also be treated effectively with plasma. Many other illnesses can be treated with plasma, but have not yet been examined in detail.

### **Does the Treatment Have Any Side-Effects?**

Neither damage to deeper layers of skin, nor other side-effects or resistances have been observed in clinical studies and various documented case studies which have been carried out since 2005.

### **How Does the Treatment Work?**

Treatment with the plasma jet kINPen® VET is very simple. The pen-like handheld device is traced over the affected area of skin at a moderate speed of about 5 mm/sec. The plasma with a comfortable temperature of around 40° C is emitted from the point of the device. It has an effective area of about 1 cm<sup>2</sup>. The intensity of the treatment is controlled over the treatment time and should last for approximately 20-30 sec/cm<sup>2</sup> of wound area, in order to achieve the best possible affect. An interchangeable spacer makes sure that you always keep the device at the right distance.

### **How Often Does Treatment Have to Occur?**

Treatment should take place about 2x per week. As the cell-stimulating effect of the plasma is only seen after 1-2 days, daily treatment is not recommended. The treatment period depends on the size and the intensity of the wound and usually lies between 4-8 treatments.

### **Which Gas Is Needed and What Does It Cost?**

The kINPen® VET uses the noble gas argon at a high purity grade of 4.8. Argon guarantees a highly effective, stable treatment under constant conditions. The gas can be purchased from common gas providers such as Air Liquide or Linde Gas. If you are using a 10l bottle, average gas costs of € 0,15 per minute of treatment will occur.

### **How Much Does Treatment Cost the Pet Owner?**

Each treatment costs between € 15 and € 60, depending on the size and intensity of the wound. The treatment can be invoiced as an analogue service according to the GOT (fee regulations for vets) and should be similar to a laser or wound treatment.

### **What Is the Difference to a Laser?**

By generating heat in deeper layers of tissue, lasers widen the blood vessels and thus improve blood circulation in the affected layer of tissue. This means that the natural wound-healing process is influenced indirectly. Plasma on the other hand, works directly and indirectly. The direct effect of plasma can be seen in the killing of various microorganisms such as viruses, bacteria or fungi. At the same time, plasma works indirectly, by stimulating the cells. This leads to the release of neurotransmitters and thus supports the healing of wounds.

### **Who Manufactures the Device?**

The neoplas GmbH is manufacturer of the kINPen® VET and is a spin-off company of the Leibniz Institute for Plasma Science and Technology (INP Greifswald), Europe's largest non-university research institute for low temperature plasmas. The high-tech company which was founded in 2005 has been specialised in the research and development of plasma medicine for many years and, with the kINPen®VET, is pioneer on the veterinary medicine market.

More information at:

[www.plasma-tiermedizin.de](http://www.plasma-tiermedizin.de)

