

## **Part 1 - COLD PLASMA: Tested in space - used on earth**

### **What cold plasma can do and why it is becoming increasingly important for medicine.**

#### **What is cold plasma?**

Plasma is a mixture of particles and is considered the fourth state of matter after solid, liquid and gas. The best-known example of plasma is the sun. A few years ago, scientists asked themselves whether they could tame this chaotic structure, cool it down and use it for mankind. In doing so, they heralded the birth of cold atmospheric plasma, or CAP for short. Among other things, they developed a mobile medical device that is a helpful addition to wound treatment.

#### **How does the cold plasma device work?**

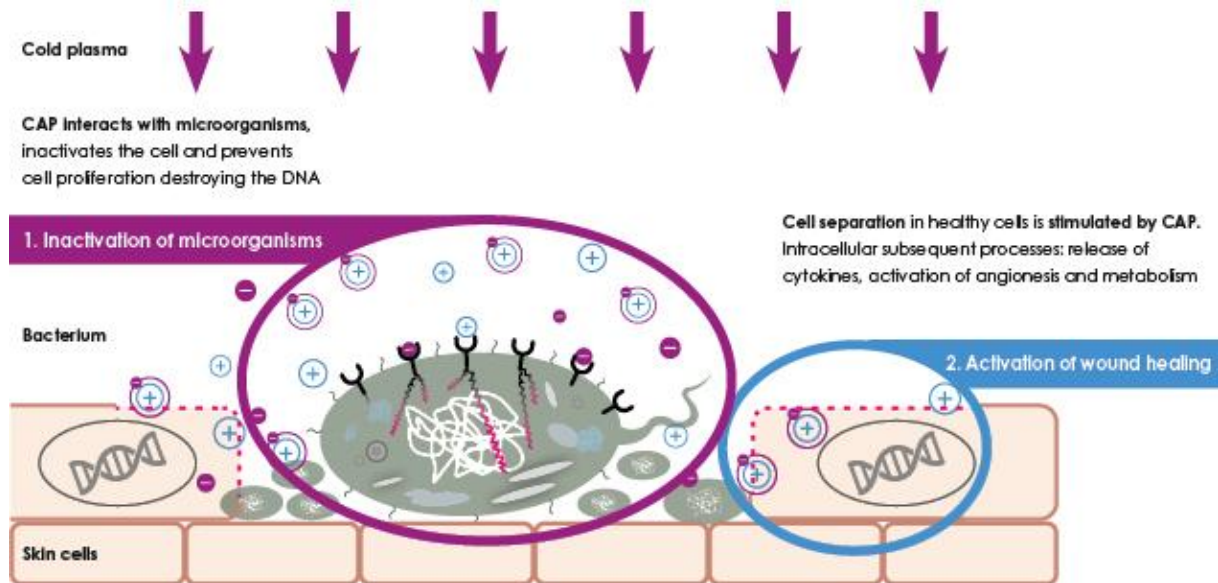
Small electrical discharges in the device lead to a chain of physical and chemical reactions with the air surrounding it. These more than 600 reactions create what is called a plasma cocktail. It consists of components such as electrons, ions, UV and thermal radiation. Its most important components, which want to react unconditionally with the environment, are called reactive species. These are mainly oxygen and nitrogen compounds. During a 60-second application, the nature of the reactions changes over time: At the beginning, the oxygen reacts, at the end of the treatment the nitrogen reacts. Both are important for the treatment of wounds.

#### **What can cold plasma do?**

The physical and chemical processes triggered by CAP lead to different interactions in different cells. For example, the resulting reactive species in viruses and bacteria - even in multi-resistant pathogens - destroy cell structures including the exposed DNA. In this way, the microorganism is inactivated. It can therefore no longer cause damage or reproduce.

Cold plasma renders up to 99 percent of the germs on the top layer of skin harmless. Healthy human cells, on the other hand, do not react negatively to it. On the contrary, they are stimulated to divide, which additionally promotes wound healing. This is why CAP is extremely interesting for the treatment of acute and chronic

wounds.



In medicine, cold plasma can revolutionise, supplement and in some cases even replace conventional treatment methods. It already offers a new therapy option for chronic, often long-standing and non-healing wounds in nursing care. Treatment with cold plasma can also reduce the use of antibiotics or cortisone. Another advantage: side effects have not been observed to date. In the numerous treatments, neither resistances nor allergies developed through the use of cold plasma.