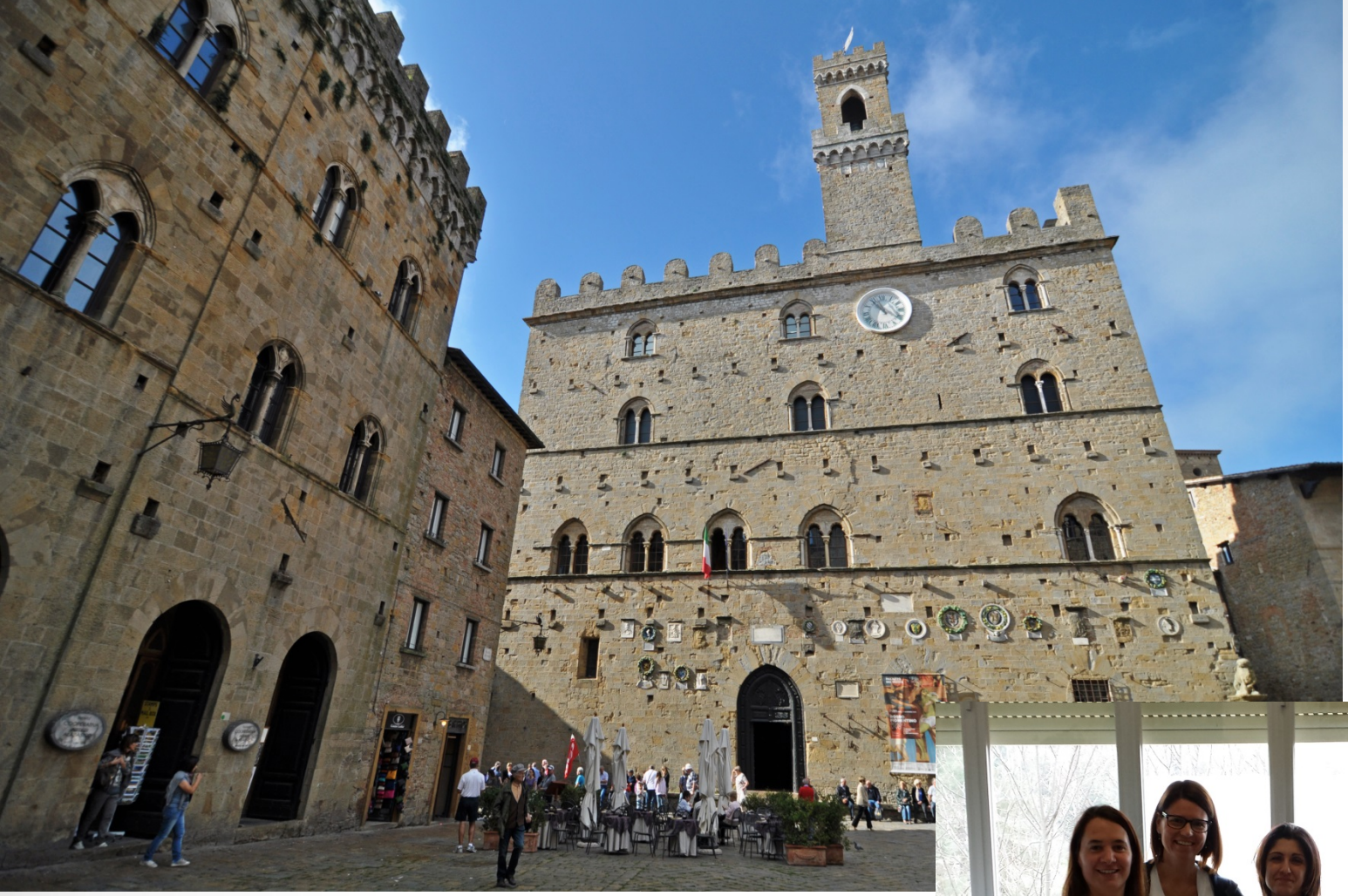

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BRIEF HISTORY OF HONEY

The properties of honey have been known since ancient times.

The first knowledge dates back to the papyrus:

✓**Smith Papyrus**: (also known as surgical papyrus) is the oldest medical treaty come down to the present day. Written in hieratic (cursive form of hieroglyphic writing, commonly used by Egyptian scribes), dates back to the XVIth-XVIIth Dinasty of the Second Intermediate Period of Egypt, in about 1500 BC
✓**Ebers Papyrus**: (about 1550 BC), named after its European buyer, is a papyrus roll 20 meters long and 20 cm high, divided in 108 pages and dating back to the Eighteenth Dynasty of Egypt, more exactly to the reign of Amenhotep I, even if the text could be significantly older.

In **ancient Egypt** it was widely used in medicine to treat digestive disorders and to create ointments to be applied on sores or wounds.

One of the main sources documenting the high regard that honey enjoyed in ancient times is definitely the **Bible**, where we can find a lot of mentions.

In the Islamic world honey played a very important role; it's even mentioned in the **Koran**: "... Your Lord inspired the bees to build their hives in the hills, trees and houses of men. From their bodies comes out a drink of varying colors, wherein there is health for mankind ".
From this extract we can deduce that honey was also used for therapeutic purposes.

The Romans used honey as a food preservative, sweetener, ingredient in bitter-sweet sauces and for the preparation of alcoholic beverages ... Besides that, it was also used in treating and preventing diseases.

In **India**, honey is highly regarded and it's even used in the ancient Ayurvedic medicine, which dates back more than three thousand years ago, according to which honey has a purifying, aphrodisiac, refreshing, vermicide, anti-toxic, regulatory, refrigerant, stomachic, cosmetics, toned, slightly hypnotic and healing action.

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When did mankind stop using honey for medical purposes?

It starts in the 40s of last century with the discovery of the first antibiotic that, in the following decades, led us to believe that infectious diseases could be eradicated.

The renewed interest in honey as an antibacterial / antiseptic product overlaps with the rapid development of antibiotic resistance in microorganisms.

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MANUKA HONEY

Manuka honey is produced by the shrub *Leptospermum scoparium*, mainly present in New Zealand and Australia (Old, 2013), whose activity is linked to methylglyoxal (MGO) contained in it (Majtan et al ., 2012).

During the production process the honey is sterilized by irradiation with gamma rays (Bellingeri, 2014).

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The antibacterial properties of honey is due to the presence of **hydrogen peroxide**. This natural antiseptic is considerably reduced or even eliminated by:

- ✓ heat
- ✓ light
- ✓ Catalase, an enzyme found in the tissues and in human serum. This enzyme performs the decomposition of hydrogen peroxide, reducing the antibacterial effectiveness of the honey.

Professor Peter Molan, biochemist in New Zealand, showed that antimicrobial properties of Manuka Honey do not only depend on the presence of hydrogen peroxide.

Measuring methods for the **antibacterial potency** of Manuka honey:

- ✓ UMF stands for "Unique Manuka Factor". UMF tests the honey antibacterial performance in comparison with phenol, a disinfectant.
- ✓ MGO: measures the levels of methylglyoxal (Methylglyoxal), the active ingredient responsible for the antibacterial action of Manuka honey.

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Main effects of Manuka Honey on wounds

✓It helps the process of debridement of necrotic tissue performing an osmotic effect, contributing to clean the wound bed

✓It facilitates the creation of a conducive to healing environment, bringing the pH value between 3.5 to 4 (optimal values)

✓It performs an anti-inflammatory activity

✓It inhibits the growth of biofilm in the wound bed

✓It helps protecting the wound bed and maintaining a moist microenvironment, essential to a correct and fast tissue regeneration

✓reduces / eliminates the bad smell, indicative of infection and poor management of the wound bed

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CLINICAL CASE N° 1

83 years old woman suffering from peripheral arterial disease, arrived in our clinic on 06/28/2016.
Reddened periwound skin, presence of necrotic tissue and pain.

Wound after15 days of treatment:

- Remuval of necrotic tissue
- cleaning of the wound with product based PHMB (Poliesamide)
- application of gauze with Manuka honey to control bacterial load and to stimulate granulation and re-epithelialisation

Impossibile visualizzare l'immagine. La memoria del computer potrebbe essere insufficiente per aprire l'immagine oppure l'immagine potrebbe essere danneggiata. Riavviare il computer e aprire di nuovo il file. Se viene visualizzata di nuovo la x rossa, potrebbe essere necessario eliminare l'immagine e inserirla di nuovo.

A month later: complete healing of the lesion

Impossibile visualizzare l'immagine. La memoria del computer potrebbe essere insufficiente per aprire l'immagine oppure l'immagine potrebbe essere danneggiata. Riavviare il computer e aprire di nuovo il file. Se viene visualizzata di nuovo la x rossa, potrebbe essere necessario eliminare l'immagine e inserirla di nuovo.

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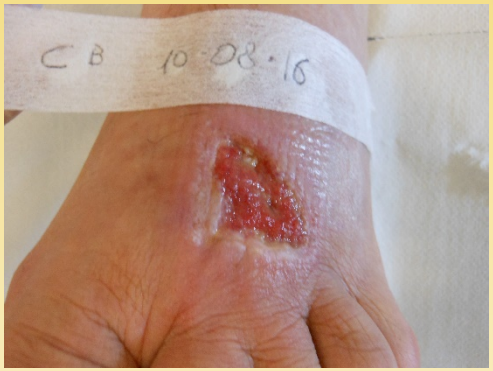
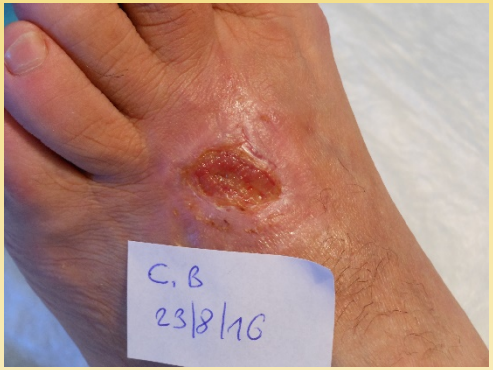
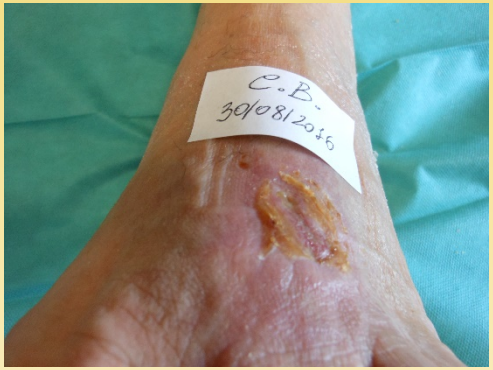
CLINICAL CASE N° 2

63 years old man comes to our attention on 10/08/2016 with a wound on the foot resistant to former treatments. Reddened periwound skin with steady margins and tough edges. Modest fibrin amount on the wound bed.	
13 days later: active margins, pink peri-wound skin. The edge is almost disappeared (there's a continuity line between the bottom of the wound and surrounding skin), controlled exudate. treatment applied: •Wound cleaning with a PHMB (Poliesamide) based product •application of gauzes containing Manuka honey	
7 days later: granulating –bottom wound , keratinocytes full activity that leads to a re-epithelialization from the edges. Pink peri-wound skin	

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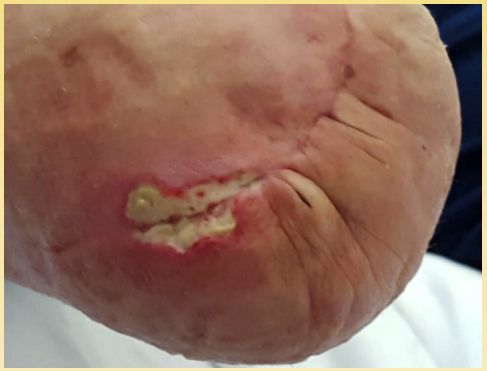
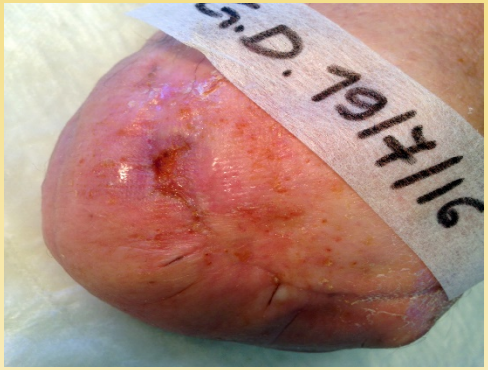
CLINICAL CASE N° 3

73 years-old man, diabetic amputee, with surgical wound dehiscence, resistant to former treatments . Lesion with abundant amount of fibrin on the wound bed, reddened periwound skin, small amount of exudate in the margins.	
20 days later the first debridement: clean and granulated wound bed, active margins, well controlled exudate, no signs of inflammation on the surrounding skin. • wound cleaning with a PHMB (Poliesamide) based product • application of gauzes containing Manuka honey	
15 days later: active margins and almost closed, pink peri-wound skin. Next to a complete recovery.	

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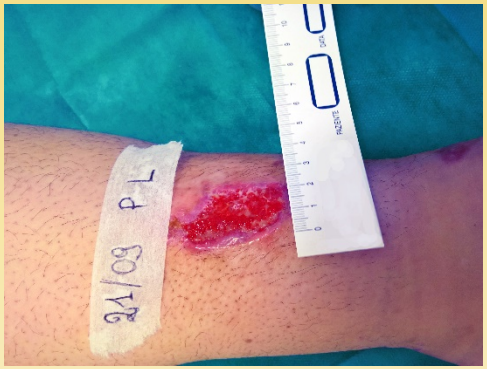
CLINICAL CASE N° 4

23 years old woman, post-orthopedic surgery wound in her right leg, non-responsive to former treatments. The lesion shows abundant exudate with wide necrotic area in the wound bed, reddened peri-wound skin with expanding margins.	
10 days later: wound bed clean and granulated, active margins, well controlled exudate, no signs of inflammation on the surrounding skin. • Wound cleaning with PHMB based product (Poliesamide) • application of gauze containing Manuka honey	
40 days later: complete healing	

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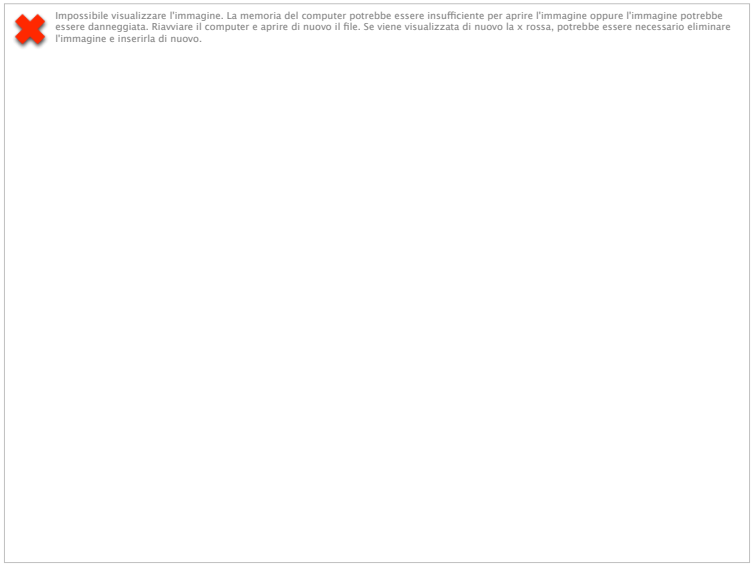

THANK YOU