

The Coffee Ground for Wound Treatment is Effective, Safe, and Humanized

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Abstract Coffee water extract strongly inhibits many Gram (+) and Gram (-) bacteria. In experimental wound healing in rats, coffee grounds healed wounds quickly. Its robust antibacterial, antioxidant, and anti-inflammatory perfect for wound healing. The clinical application of coffee grounds for acute and chronic wounds is a safe, compliant, simple, non-allergic, pleasant aroma, and uncomplicated. A thin layer of coffee grounds remains on the wound during replacement to ensure the superficial cells multiply safely and prevent cell manipulation. Debridement and dressing replacement perform rarely. It resulted in practical and faster wound healing and acceptable scarring. The method is called the New Paradigm of wound management. The coffee ground for wounds drives public health strengthening in wound care, promotes patient-centered care, and humanizes humans.

Keywords: coffee, antibacterial, wound healing, the new paradigm, not traumatic

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1. Introduction

Communities in remote villages in Indonesia have a long history of local wisdom using homemade coffee grounds to treat various wounds. [1] This incident was reported by doctors working in primary health care near coffee plantations. [1] They confirmed that there were no infectious complications from using the powder. So, coffee is impressively safe. Based on the report, we conducted studies to prove it. Based on the information, we conducted related studies to prove it. Laboratory research experience started in 2003 and continued with clinical research. [1] The result is encouraging.

2. Antibacterial, Anti-inflammatory, and Antioxidant

The community's tradition of using coffee in medicine teaches us about the safety and success of treating wounds. Their experiences told us that they apply the coffee ground for damage healing. [1] Their local wisdom expressed that a natural source has a better equilibrium. Hence, it is feasible to use coffee to improve wound cell proliferation.

In 2003, we used caffeinated coffee grounds in microbiological studies (inhibition against MRSA bacterial culture), experimental rats, and later in our

clinical practice with the patient's written consent. We have applied coffee grounds to over 300 uncomplicated acute/chronic wounds. The wound heals with proper scar tissue. Coffee's active substances: caffeine, chlorogenic acid, trigonelline, and caffeic acid, are in unity to function as beneficial substances. The topical layer of coffee (Figure 1) is antioxidant to avoid damage caused by oxygen free radicals on the growth of tissue cells. The antibacterial ability of coffee can protect wound tissue from infectious complications.

Our research shows that coffee water extract has a powerful antibacterial effect against various bacteria. Coffee has proven solid antibacterial activity against Methicillin-resistant *Staphylococcus aureus* ATCC-6538, *Escherichia coli* ATCC 25922, *Propionibacterium acne* ATCC 11827, and *Streptococcus pyogenes* ATCC 19615.¹⁻⁴ This ability helps avoid terrible infections, as shown in the case of diabetes (Figure 2).

Clinical experience shows that coffee grounds are non-sticky to wound tissue, do not interfere with cell viability, help regenerate cells, and have a faster healing mechanism than hydrocolloid pads or gauze. [1,2]

The authors' research using coffee to treat acute and chronic wounds has demonstrated its safety. [1] Coffee has naturally potent anti-bacterial, antioxidant, and anti-inflammatory properties. It stimulates active skin microcirculation and reduces wound odor. [1,2] Coffee mixes with wound fluid to form a hyperosmotic liquid and produce hydrogen peroxide. It plays a role in killing pathogenic agents.² Coffee operates through all phases of

healing, namely the inflammatory phase, the epithelial proliferative phase, and the remodeling phase for faster healing. [1] Coffee triggers platelet adhesion to limit bleeding during the hemostasis phase. It then begins with the proliferation of capillary cells (angiogenesis) and fibroblasts. Epithelialization starts from the periphery to the center of the wound. The final phase is remodeling, which trims the excess and adds to the lack of collagen scar tissue.

Coffee's benzopyrone stimulates macrophages to eradicate harmful bacteria and foreign biological materials. [5]

Coffee produces VEGF (Vascular Endothelial Growth Factor), TGF (Transforming Growth Factor), FGF (Fibroblast Growth Factor), and PDGF (Platelet-Derived Growth Factor), which regulates angiogenesis, and activates cellular growth for wound healing. [6]

Based on our experience, wound healing does not require the assistance of tissue deformation (micro or macrodeformation). There is no need for synthetic sanitary napkins, which are expensive and require specific specialized training. Coffee can help with healing methods without the need for anesthetic drugs.

Therefore, wound healing must be uncomplicated, accessible, not intimidating, capable of resisting wound odor, suitable for any wound surface, and low cost. It turns out that ground coffee meets these requirements.

3. Coffee Stability

Ojeh's in vitro has proven that caffeine is an adenosine receptor blocker, which inhibits epithelial regeneration. [7] In contrast, in the experimental wound experience in rats, the caffeinated coffee group healed faster than the Argentum sulfadiazine and control groups. We use whole coffee in a series of clinical cases and quickly heal diabetic or non-diabetic wounds smoothly without complications. [1] Caffeinated coffee has stability in the wound-healing process. Yulianti's clinical study (2017) confirmed that coffee grounds are safe and accelerate the healing of diabetic ulcers. [8]

Figure 1 shows that coffee grounds that stay in place can prevent bacterial infection and cell damage. [9] Caffeine in vitro has properties that inhibit cell

proliferation. [7] Caffeine and other active substances in coffee contribute to its natural role in creating a positive balance. All the active substances in coffee are balanced to support healthy proliferation processes for wound healing. [1]

4. The New Paradigm

Coffee heals wounds faster than hydrocolloids or gauze in rats. [1] Wound cleaning should be done with care since it can cause trauma that damages cells. Debridement should perform to remove necrotic tissue and foreign bodies carefully. Frequent irrigation with sterile fluids can increase the wound tissue's pH and microbial pollution from the hair follicles of the surrounding skin. [10] Limiting the frequency of debridement is a form of reducing trauma and patient complaints. It distinguishes from the old paradigm and can be said to be a humanized form of wound care.

The wound dressing should have a pleasant smell to overcome the smell of the wound. The antibacterial properties of coffee and its aroma can reduce odor from injuries. The scent of wound dressings is essential to attract wound sufferers because they know the smell of coffee, and it will reduce fear. [1] In our series, coffee grounds can heal wounds using authentic and reliable practices without causing complications. [1]

The gauze dressings cause cells to stick and lift, which can slow healing. Some ground coffee is left intentionally on the wound surface, so the cells will not stick to the gauze. [9] Thus, coffee grounds prevent trauma during replacement.

Coffee grounds can survive wounds due to their strong antibacterial, anti-inflammatory, and antioxidant properties.

If the wound is dirty, debridement is necessary. Some superficial wound cells die, although the remaining cells will repopulate and recover. Debridement daily can cause a slower healing time.

Coffee is an efficient wound dressing and accelerates wound healing due to less frequent debridement. [1,9] This procedure is called the New Paradigm of Wound Management. [1,9,11]

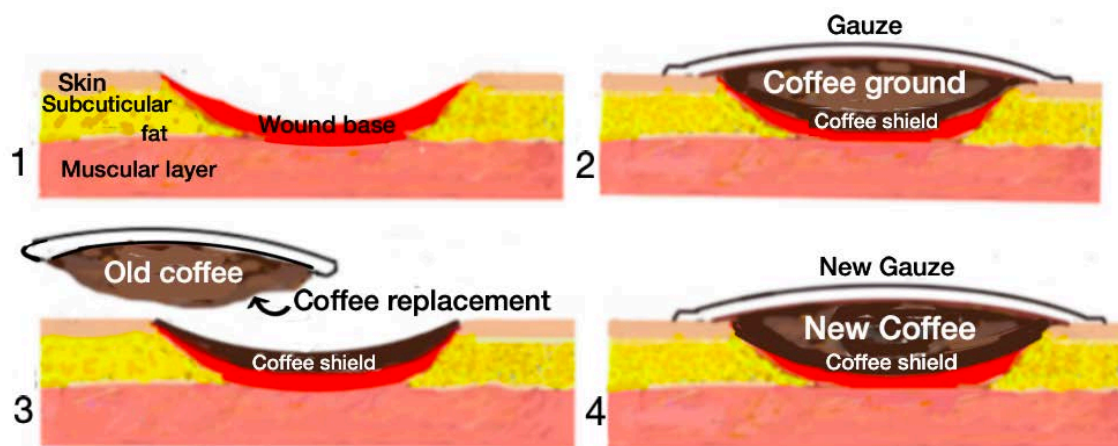


Figure 1. In dressing changes, the thin layer of coffee (coffee shield) remains to protect the wound tissue cells and avoid manipulations that damage cells



Figure 2. A 58-year-old man with a postamputation diabetic abscess on the left below the knee

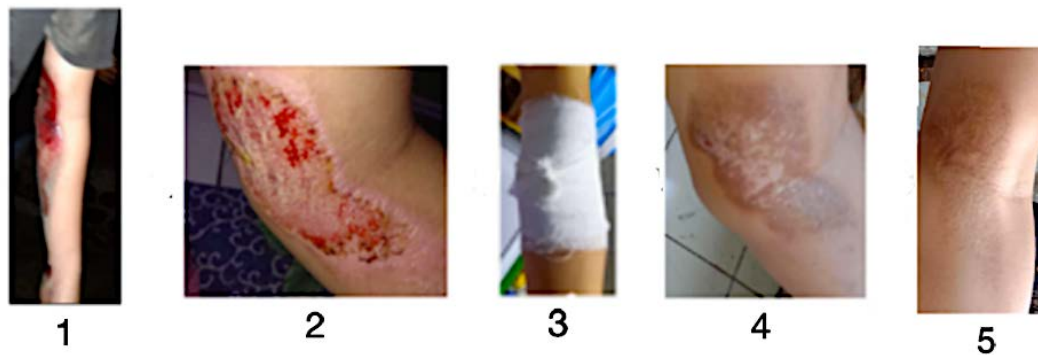


Figure 3. A 27-year-old man fell from a bicycle and got an acute laceration wound on his left hand (Picture no.1). He got stitches at the hospital, but the stitches came off the next day (Picture no.2). He decided to use coffee and a bandage using gauze. Picture no.4 was on day 14. Picture no. 5 was a year later

Figure 2 and Figure 3 are examples of wound series of acute and chronic wounds treated using ground coffee since 2003. The diabetic lesion (Figure 2) was deep enough near the bone, with reasonable blood glucose control and no sign of osteomyelitis, after seven days of a broad-spectrum oral antibiotic. Its healing shows an adequate scar.

In large wounds measuring 10 cm by 10 cm or more, some cases proceed with split-thickness skin grafts after granulation tissue formation.

In the wound, the coffee ground will seep into the damage and absorb fluid or exudate. Coffee's hydrogen peroxide actively helps fight bacterial infections and positively influences the regulation of migration signals to accelerate wound healing. [12]

Coffee proteinases function to maintain autolysis, which benefits the healing phases. [11]

Coumarins in coffee belong to the benzopyrone family and stimulate macrophage activity. [5] Macrophage defense mechanisms phagocytize microbes and foreign matter to prevent infection and clean wounds. [11] The immune system protects cells against infection and decreases the production of the inflammatory cytokines IL-1, IL-6, IL-12, and TNF- α . [12] The knowledge of ground coffee for treating wounds has been recognized worldwide for its simplicity, effective healing, and relatively low cost. Coffee is easy to obtain and use by the community to treat wounds. Figure 3 shows that hospital wound care is traumatizing and has high costs. Some people already know and can help by using coffee grounds. The use of coffee for wound treatment not only has the

benefit of reducing high costs. With this in mind, coffee with the new paradigm of wound management is more promising than Modern Wound Dressing and Negative Pressure Wound Treatment. Treating wounds using coffee has been practiced in our clinic for more than 15 years. The reports have spread through lectures, books, and presentations at local, national, and international meetings. Injured sufferers who successfully managed have spread to others. It turned out that the wound healed smoothly, with a simple procedure, and with no complications. Thus, coffee with the New Paradigm is the best answer for general wound care for society, especially for marginalized communities geographically isolated from modern health services.

5. Application of Humanism

As a living being, a man must carry out, maintain, and develop his life with its potential. Humans have the right and responsibility to give meaning and form to their lives. Knowledge of coffee for wounds provides a sense of independence, helping oneself properly. Useful for remote environment situations, good availability. Can be used any excellent and responsible knowledge to humanize humans.

6. Conclusion

The coffee ground has a significant antibacterial capacity to counter bacterial infection actively. It is a

natural product familiar to the wound tissue as a non-adherent dressing anticipates the injury of the wound bed as a New Paradigm, which creates better healing and compliance to wound surfaces for acute and chronic wounds. Its healing ability, low cost, compliance, and ease of procedure make coffee a favorite wound dressing that meets health requirements. It is humanizing humans.

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