Microdacyn60®

Not an Antiseptic but a Wound Treatment Solution

A clean decontaminated wound is fundamental for effective wound healing because problems will arise when infections persist and the wound becomes chronic.

Cleansing a wound during the inflammatory phase is therefore essential to wound healing. Debridement in combination with antiseptic irrigation has become a necessity to get rid of necrotic tissue, pathogenic microorganisms and foreign bodies. So, clearly infected wounds should be treated antiseptically. Hence there are many wound cleansers with the ability to kill microorganisms on the market today.

But the main question arising is: to which extent will antiseptics contribute to stimulation of wound healing? and how does Microdacyn60® differentiation from these other antiseptic solution?

The most effective antiseptics are usually the most cytotoxic ones. This is due to high and toxic chemical ingredients composition.

As a result, these toxic antiseptics not only will kill bacteria but also destroy the surrounding skin and peri-wound tissue. The effect is impairment of infections and inflammation resulting in inhibition of the granulation and epithelialization process. The result is a chronic wound.

Treating infections has never been our isolated goal. And although Microdacyn60® was designed to fight micro-organisms, what we really aim for with Microdacyn60 is to **combine safety and efficacy to heal wounds as quickly as possible**

Microdacyn60® , formulated with our patented Microcyn Technology, is non-cytotoxic, non-irritating and, in fact, as safe as water. The concentration of active ingredients is very low but yet extremely effective. Studies show that Microdacyn60® results in an average 30% faster wound healing, with no accumulation of toxic ingredients and no side effects!

Meaning that Microdacyn60® is not just another Antiseptic but a **WOUND TREATMENT SOLUTION** that speeds up wound closure by stimulating the body to perform its own healing process.

- tightly controlled and unmatched chemistry resulting in unmatched stability
- used on one of the body's most important molecules: **Hypochlorous acid (HOCl)**
- the first revolutionary stable patented HOCl formulation in a bottle
- evidence based stable, safe & effective patented technology

Usage information

1. Irrigate wound with Microdacyn60® WoundCare up to 5 times per day and let it take effect for 15 min.
2. Clean wound with a compress soaked in Microdacyn60® WoundCare.
3. Apply preferred wound bandage as usual.

Indications for use:

- **Treatment of:**
  - Acute- & Chronic wounds
  - First-, & second degree Burns
  - Surgical procedures
- **Debridement:** Use Microdacyn60® as the standard for debridement combined with mechanical devices.
- **Moisturising:** Use Microdacyn60® solution in combination with Microdacyn60® hydrogel to keep the wound moistened.
- **Exudate Management:** Use it for exudate management in combination with many gauzes and dressings.
- **Healing Promotion:** Wound healing starts with Microdacyn60®

Product Portfolio

	Content	Shelf life
Microdacyn60® Wound Care - liquid solution	100ml spray	24 months
	250ml spray	
	500ml	
	990ml NPWT	
	5000ml	
Microdacyn60® Wound Care - Hydrogel solution	60g	24 months
	100g	
	250g	

Practical info

- Microdacyn60® Wound Care is a ready-to-use wound-irrigation.
- pH-neutral solution: pH-value 7.0
- Shelf life of 24 months at room temperature if not opened
- Use within 60 days after opening
- Can be warmed before use with no problem. (to 40°C)

Ingredients

Water, sodium chloride, hypochlorous acid, sodium hypochlorite.

Sonoma PHARMACEUTICALS

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Microdacyn60®

Wound Care Treatment Solution

Highly effective on acute wounds, chronic wounds, surgical procedures and 1st & 2nd degree burns

Sonoma PHARMACEUTICALS

HOCl Time Kill in Solution

99.999% REDUCTION OR HIGHER IN 30 SECONDS

Acinetobacter baumannii	15,000 cfu	Micrococcus luteus	5,000 cfu
Aeromonas hydrophila	1,500 cfu	Pseudomonas aeruginosa	3,700 cfu
Candida albicans	4,400 cfu	Proteus mirabilis	4,700 cfu
Candida parapsilosis ATCC 22019	4,400 cfu	Salmonella enterica	4,700 cfu
Clostridium difficile (spore)	4,400 cfu	Serratia marcescens	4,400 cfu
Enterobacter aerogenes	4,700 cfu	Staphylococcus aureus MRSA	4,700 cfu
Enterococcus faecalis VRE ATCC 51299	4,400 cfu	Staphylococcus aureus	4,400 cfu
Escherichia coli	4,400 cfu	Staphylococcus epidermidis	4,400 cfu
Klebsiella oxytoca	4,400 cfu	Staphylococcus saprophyticus	4,400 cfu
Klebsiella pneumoniae	4,400 cfu	Streptococcus pneumoniae	4,400 cfu
Legionella pneumophila	4,400 cfu	Streptococcus pyogenes	4,400 cfu
Listeria monocytogenes	4,400 cfu	Vibrio cholerae	4,400 cfu
Malassezia pachydermatis ATCC 14522	4,400 cfu		
Neisseria lactamica	4,400 cfu		

30 seconds "in vitro kill time (%) reduction" against a broad spectrum of gram-positive, gram-negative bacteria in solution. **Effective against BIO-FILM.**

Microdacyn60® uniquely positions against its competitors and strengthens the usage and recommendation to be used in multiple disciplines of surgery.

- **Highly effectiveness against different types of bacteria.**
- **Eradication of multiple categories of spores, aspergilli, fungi and even coated viruses.**
- **Non-irritating, non-cytotoxic and non-carcinogenic effect.**

The primary mode of action of Microdacyn60® involves the mechanical removal of cellular debris, senescent cells, necrotic tissue, and foreign material from the skin and wound surface using a moistened dressing (e.g.gauze) along with irrigation. Removal of these materials through these actions is known to decrease infection rates and improve wound healing. The secondary mode of action is a function of the properties of hypochlorous acid (HOCl) and its salt, hypochlorite (OCl-). These ancillary substances which are present in Microdacyn60® in very low, non toxic amounts, assist in the reduction of microorganisms.

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Wound antiseptic properties*

Compound	Antimicrobial onset time	Deep Effect (d)	Resistance	Wound healing	Cartilage tolerability	Sensitization	Systemic risk
Ag+	<24h	1	Yes	Inhibition	Possible	No	Yes
CHD	5-10h	1	Yes	No Inhibition	No	Yes	Possible (c)
AA	15-30h	2	Yes	Supportive (0.15%)	Possible	No	No
Microdacyn60®	90-300s	3	Yes	Supportive	Possible	No	No
OCT	5-10h	1 (c)	Yes	No Inhibition	No	No	No
PHMB	5-10h	2	Yes	Suppressive	>0.05%	Yes	No
PVP-I	<2h	3	Yes	Partial Inhibition	Yes	Yes	Yes

a Depth of effects legend: 1 Superficial effect (SI (Stratum corneum)); 2 Deeper than 1 due to a lack of experimental data, theoretical extrapolation based on physicochemical properties or demonstrated absorption ; 3 circumstances with aforementioned 2 or 3 ( ): Possibility of separation of 4 chloroplasts from the chromatophore molecule

Clinical findings Wound Antiseptics *

Criteria	Microdacyn60®	OCT	PHMB	PVP-I
Antimicrobial efficacy	Yes	Yes	Yes	Yes
Improvement of Wound Healing	Yes	No Inhibition	Yes	Partly inhibition
Peritoneal Lavage in septic peritonitis	Possible	Contraindicated	Contraindicated	Contraindicated
CNS tissue applicability	Possible	Contraindicated	Contraindicated	Toxic
Cartilage applicability	Possible	Contraindicated	<0.05%	Yes
SSI prevention	Possible	No Studies	Effective	>0.05%

Biocompatibility Overview

Category	Sub-category	Standard / method	Result
Toxicity	Genotoxicity	ISO 10993-3:2003	Pass
	Cytotoxicity	ISO 10993-5:1999	Pass
	Acute oral toxicity	ISO 10993-11:1996	Pass
	Acute dermal toxicity	ISO 10993-11:1996	Pass
	Acute inhalation toxicity	ISO 10993-11:1998	Pass
Sensitization	Dermal sensitization	ISO 10993-10:2002	Pass
Irritation	Skin irritation	ISO 10993-10:2002	Pass
	Ocular irritation	ISO 10993-10:2002	Pass

Summary Clinical findings Microdacyn60® *

Wound Type	Comparison	Result	Study design
Exploratory laparotomy / Peritonitis	Microdacyn60® vs. NaCl	Significant reduction of fever and prevention of SSI	RCT
Diabetic foot ulcers, VLU, burns	Microdacyn60® vs. PVP-I	Faster granulation and epithelialization, faster reduction of exudation, reduction of surrounding edema and erythema, better cosmetic results in burn wounds; PVP-I: more skin irritation and pain in burns	RCT
Chronic wounds, SSI	Microdacyn60® vs. PVP-I	Significant wound size reduction, fewer persisting infections due to P. aeruginosa, S. aureus, and Klebsiella spp.	RCT
Diabetic foot ulcers	Microdacyn60® vs. PVP-I	Significantly better wound healing, control of infection, significantly more interventions in the PVP-I study section.	RCT
Chronic Wounds	Microdacyn60® vs. PVP-I	Significant wound size reduction, better control of microbial colonization; was well tolerated	RCT
Diabetic Wounds	Microdacyn60® vs. NaCl soaked gauze	Significantly reduced hospitalization and wound size improvement in wound care.	Blinded RCT
Diabetic foot ulcers	Microdacyn60® vs. PVP-I	Significant reduction of necrotic and soft tissue infection, improved granulation, lower occurrence of erythema	Blinded RCT
Diabetic foot ulcers	Microdacyn60® vs. PVP-I	Reduced treatment time	RCT
Burns	Microdacyn60® vs. Ag	17% reduction in use of antiseptics, 50% reduction in hospitalization	Retrospective Cohort Study
SSI's	Microdacyn60® vs. PVP-I	Significantly reduced hospitalization and reduction of pain	Retrospective Cohort Study

The greatest efficacy

Clinically proven

2018 Consensus paper on Wound Antiseptics recommends the use of Microdacyn60® in wound irrigation. It explicitly references Microdacyn60® solution and Hydrogel.

Over 100+ research articles, posters, case and clinical studies showcase both the efficacy and safety of the Microcyn® Technology, which is the foundation for the Microdacyn® products.

Microdacyn60® is the first choice in the treatment of the following indications:

- **Decontamination of acute & chronic wounds**
- **Central Nervous System tissue exposure under surgeries**
- **Wounds with lack of drainage (cavities)**
- **The only recommended solution for peritoneal lavage**

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Maximum tolerance

Overall reduction of costs & improved quality of life

33% faster healing resulting in shorter hospitalization.

More than **five million patients** have already been treated worldwide with Microdacyn60® Wound Care without any indication of irritation, sensitization, toxicity, or eye irritation.

- Less (no) infection
- Less amputation
- Less scar tissue forming
- Less antibiotic administration

Microdacyn® functions are the result of highly controlled chemistry. Microdacyn60® has unmatched chemistry resulting in unmatched stability. Minor modifications can have a major effect on stability and efficacy. Products with the same pH and same active ingredients can have different properties. Microdacyn60® provides superior stability due to Better- & Patented Science.

PROVEN STABILITY, SAFETY & EFFICACY

24M

State of the Art Manufacturing Facility in Guadalajara, Mexico, shipping to 54 countries

Evidence based technology

A relentless passion for healing

Visit our website to learn more:

100+ Clinical papers
and research studies scientifically support Microcyn Technology

60+ Approvals
Worldwide regulatory experience

50+ Patents
Discover our patent portfolio summary

In Testing
Read more about the efficacy and safety tests passed

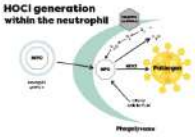
Microcyn®
Technology

Physiological Anti-microbial action

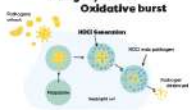
Back in 2004, Sonoma Pharmaceuticals was the first company to introduce a revolutionary stable patented Hypochlorous acid-based formulation in a bottle. Microcyn® Technology. Its main ingredient, the HOCl is similar to the natural hypochlorous compound produced by the human body's immune system to eradicate foreign pathogens. The result is a non-irritating, non-toxic and environmentally friendly liquid or gel without any chemicals, no side effects or contraindications.

The Microcyn®-based family of products are formulated from an electrically charged oxychloride compound of small molecules. The main components, **hypochlorous acid (HOCl)**, is naturally produced as part of our immune system during the phagocytosis.

HOCl generation within the neutrophil



Phagocytosis & Oxidative burst

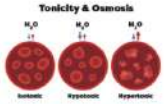


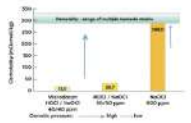
During the activation of neutrophils, respiratory bursts generate hydrogen peroxide (H_2O_2) and the activated granule enzyme myeloperoxidase converts H_2O_2 into hypochlorous acid ($HOCl$). When neutrophils encounter bacteria or other pathogens, the neutrophils engulf it, generate HOCl and instantly destroying the microorganism. This process is called the **"oxidative burst."**

While Microdacyn60®'s active ingredient, HOCl increases microorganisms' cell wall permeability by denaturing proteins and fatty acids, it does not kill microorganisms! Wind destress microorganisms is induced by a purely natural and physical process called Osmosis.

Osmolality is induced by a difference between the intracellular and extracellular concentrations of salt; the lower the Osmolality, the stronger the Osmotic pressure, the stronger the effect on microorganisms and the stronger the Physiological Antimicrobial effect.

Tonicity & Osmosis





Combination of excessive swelling and the increased cell wall permeability will cause cell lysis. The lower the Osmolality, the stronger the effect on microorganisms.

With an Osmolality of only **13 mOsmol/kg**, Microdacyn60® has an extremely low osmolality which induces superior osmotic pressure and a very **powerful Physiological Antimicrobial effect.**

Sonoma Pharmaceuticals