Q.Light® PRO UNIT - Phototherapy for health professionals

The Q.Light® PRO UNIT Indication Filter Set is specially designed for use by health professionals. It complies with the medical product standards in the EEC according the regulation 93/42.

Q.Light® PRO UNIT provides by using different, specific indication filters and colour filters maximum flexibility and is easy to use. The optical system with special light source and patented technology, offers an ideal spectrum for various applications in the field of Photo- and Colour Light Therapy. The electronic control unit ensures the correct dose. By the comfort of being able to adjust the treatment time and the treatment diameter, Q.Light® PRO UNIT is the ideal therapy device for clinics, doctor’s offices and therapists.

The following special indication filter modules are available for Q.Light® PRO UNIT:

- **PAIN CARE**
  for the treatment of acute and chronic pain

- **SAD CARE**
  for the general treatment of Seasonal Affective Disorder - SAD

- **ACNE CARE**
  for the treatment of mild and moderate Acne

- **WOUND CARE**
  for general wound care and treatment of difficult healing wounds

Additionally 6 colour filter modules for Colour Light Therapy are available:

- Red - Orange - Yellow - Green - Blue - Violet

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### Technical data of Q.Light® PRO UNIT

<table>
<thead>
<tr>
<th>Digital display</th>
<th>Timer, Control treatment diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules</td>
<td>ACNE CARE, PAIN CARE, WOUND CARE, SAD CARE, COLOUR FILTER SET with 6 colours</td>
</tr>
<tr>
<td>Ø Standard treatment area</td>
<td>5 – 40 cm, variable</td>
</tr>
<tr>
<td>Light source</td>
<td>Natural Full Spectrum - Patented light source</td>
</tr>
<tr>
<td>Spectrum</td>
<td>385 – 1700 nm</td>
</tr>
<tr>
<td>Polarization</td>
<td>≥ 98 %</td>
</tr>
<tr>
<td>ViS emission</td>
<td>Wavelength of 385 – 780 nm</td>
</tr>
<tr>
<td>Infrared emission</td>
<td>Near-infrared radiation of 780 – 1700 nm</td>
</tr>
<tr>
<td>UV emission</td>
<td>No UV-radiation</td>
</tr>
<tr>
<td>Colour temperature</td>
<td>4700 K</td>
</tr>
<tr>
<td>CE Mark</td>
<td>0197</td>
</tr>
</tbody>
</table>
Light quality & power density of Q.Light® PRO UNIT systems

Q.Light® emission spectrum with patented light source technology

Relative Transmission in %

Q.Light® PRO UNIT – General treatment parameters

<table>
<thead>
<tr>
<th>Device</th>
<th>Polarization-degree</th>
<th>Treatment-distance</th>
<th>Treatment-diameter</th>
<th>Power-density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.Light® PRO UNIT</td>
<td>≥ 98 %</td>
<td>40 cm</td>
<td>10 – 40 cm</td>
<td>20 mW/cm²</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 cm</td>
<td>7 – 30 cm</td>
<td>30 mW/cm²</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 cm</td>
<td>5 – 20 cm</td>
<td>40 mW/cm²</td>
</tr>
</tbody>
</table>

Additional technical data for Q.Light® PRO UNIT

- Medical devices class: IIa
- Voltage: 230 V, 50 - 60 Hz
- Power supply: 60 VA max.
- Safety class: II, Type B
- Ø Treatment-energy efficiency: 40 mW/cm², 2.4 Joule/cm² (min.) at standard treatment distance
- Weight: 1'200 g
- Size: 260 x 158 x 173 mm (L x B x H)
- Guarantee: 24 month

Q.Light® PRO UNIT assembled on Standwagon Pro Details
General information about Q.Light® Phototherapy

Q.Light® Phototherapy is efficacious in all phases of healing: It arrests inflammations, alleviates pain, activates the immune response, improves perfusion and revascularization, increases lymphatic drainage and improves the metabolism.

Q.Light® Phototherapie regulates the hormonal system and optimizes the neuroimmunological parameters.

The Q.Light® PRO UNIT spectrum is clearly defined. It contains no ultraviolet rays and provides consistent energy output in the spectrum 385 to 1700 nm. The emitted light is polarized. Based on a power density of 40 mW/cm² at standard treatment distance, it penetrates deep into the tissue. The dose may be adjusted individually.

Q.Light® Phototherapy can be combined with standard treatment programs and thus represents an integratable treatment with a significant improvement in the regeneration.

Side effects or contraindications have not been reported.

How to treat with Q.Light® PRO UNIT

For optimal results, the Q.Light® therapy with specialized treatment modules should be applied on a daily base. The average therapy dose should correspond exactly to the specifications. The light beam is directed in a right angle to the area to be treated. Only after treatment area has been properly cleansed, the patient’s regenerative capacity is activated by Phototherapy.

At best, one session a day, up to 20 sessions within 4 weeks in average.

The Q.Light® PRO UNIT is specially designed for the treatment of wounds, pain, skin problems and psychological disorders.

Radiation is not recommended for people who are extremely sensitive to light (e.g. by the use of psychotropic drugs) and women in pregnancy.
Q.Light® PRO UNIT Indication Filter Set: 4 specialized treatment modules

The Q.Light® PRO UNIT offers specialized treatment modules which allows to treat specific indications always with the right and best spectrum. Just insert the module into the foreseen module slot in the Q.Light® PRO UNIT device and you are set for the treatment. The following specialized treatment modules are available:

- **PAIN CARE**
  The Q.Light® PAIN CARE module is specially designed for the treatment of Rheumatologic diseases, Chronicle pain

- **SAD CARE**
  The Q.Light® SAD CARE module is specially designed for the treatment of SED / Saisonal Effective Disorder, Depressions

- **ACNE CARE**
  The Q.Light® ACNE CARE module is specially designed for the treatment of mild and moderate Acne and Acne Vulgaris

- **WOUND CARE**
  The Q.Light® WOUND CARE modules are specially designed for the treatment of Stasis Ulcers, Decubitus Ulcers, Pressure sores, Diabetic Gangrene, Surgical Wounds, Injury wounds, Burns
**Q.Light®** Phototherapy for the treatment of acute and chronic pain

The **Q.Light®** PAIN CARE system is specially designed for the application of pain care treatments in medical practices, clinics, specialized treatment centres, nursing homes/services and for treatment at home.

The main applications for the **Q.Light®** PAIN CARE system are:

• Rheumatologic diseases
• Chronic pain
• Back problems

For pain treatment, the PAIN CARE module is used:

<table>
<thead>
<tr>
<th>Q.Light® PRO UNIT</th>
<th>Q.Light® PAIN CARE module</th>
</tr>
</thead>
</table>

**Technical data of Q.Light® PAIN CARE module**

<table>
<thead>
<tr>
<th>Spectrum</th>
<th>580 – 1700 nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polarization</td>
<td>≥ 98 %</td>
</tr>
<tr>
<td>ViS emission</td>
<td>Wavelength of 580 – 780 nm</td>
</tr>
<tr>
<td>Infrared emission</td>
<td>Near-infrared radiation of 780 – 1700 nm</td>
</tr>
<tr>
<td>UV emission</td>
<td>No UV-radiation</td>
</tr>
<tr>
<td>Light temperature</td>
<td>N.A.</td>
</tr>
<tr>
<td>CE Mark</td>
<td>0197</td>
</tr>
</tbody>
</table>

activates microcirculation
The use of monochromatic Infrared Energy Therapy in Podiatry.

Carnegie D.


Restoration of sensation, reduced pain, and improved balance in subjects with diabetic peripheral neuropathy: a double-blind, randomized, placebo-controlled study with monochromatic near-infrared treatment - Emerging Treatments and Technologies

by David R. Leonard, M. Hamed Farooqi, Sara Myers

Published: Diabetes Care, Jan, 2004

Risk of falls in elderly patients is markedly reduced through improvement in sensation, balance, and gait with infrared photo energy, and other physical therapy (Abstract).

Kochman AB:

Published: J Geriatric Phys Therapy 25:29, 2002

Changes of cytokine content in human blood after ist in vivo and invitro exposure to visible polarized light at therapeutic dose.

K.A.Samoilova, D.I.Sokolov, K.D.Obolenskaya.

Systemic mechanisms of anti-inflammatory, immunomodulating effects of Phototherapy with visible and near infrared spectrum

Research of pain, treated with red and infrared radiation, demonstrates that the effect above the microvessels of the skin, influences the entire blood in the body positive.

The overall action can be described as the following:

Irradiated blood is able to influence the total volume of blood in the body within a time of 90 minutes. Continuation of changes are observed to be continued, at a slower rate, for up to 24 hours after irradiation. The dose of emitted light applied for treatment is 12 J/cm$^2$ with a wavelength of 580-1700 nm and a polarization degree of 98%.

The treatment result can be summarized as the following:

- Immediate effect on blood changes are due to transcutaneous photomodification with a fast (30-90 minutes) translation of light-induced changes to the whole circulating volume of blood.
- Changes in blood cells and plasma of the entire circulating blood are induced.
- Increased functional activity of monocytes, granulocytes, lymphocytes, platelets and improves rheologic transport and gas-transport properties of erythrocytes.
- Induced lipid peroxidation levels in the erythrocyte membrane and plasma.
- Modified haemostasis.
- Significant is also the corresponding decreases in the plasma content of pro-inflammatory cytokines and increased levels of anti-inflammatory IL10 and IFN-g; modulated growth content factors and increased growth-promoting plasma properties for keratinocytes, endotheliocytes, fiobroblasts and radiation-damaged autologous cells.

The changes demonstrated regulatory character of phototherapy and it’s therapeutic efficacy for pain care even in cases of chronic pain. **Q.Light®** Phototherapy can also successfully used for chronic pain treatment.
Q.Light® PAIN CARE system with deep-red-beam for Physiotherapy, Rehabilitation & Sports medicine

General information about Q.Light® PAIN CARE

Q.Light® Therapy System is suited for use in standard-therapies, prophylactic treatment therapies and rehabilitation. It is a practicable and innovative high tech method of treatment. This medically certified device is already used by medical professionals in many countries. Anyone can benefit from this effective and low cost treatment. Also physiotherapists, rehabilitation clinics and sports doctors increasingly set on Q.Light®.

The emitted red light and infrared light is incoherent, polarized and without ultraviolet radiation. This radiation has been shown to have an analgetic effect on the entire organism.

The bio-positive effects strengthen the immune system, inhibit inflammation and stimulate beyond the entire metabolism, the result is a sustained pain relief.

The effectiveness of the Q.Light® PAIN CARE system is based on an exactly defined spectrum and a polarized radiation. The system works with a spectrum of 580 to 1700 nm and an energy output of 40 mW/cm² at standard treatment distance.

Moreover, Q.Light® therapy will certainly play an important role in individual health care due to it’s ease of use and reasonable price.

Side effects or contraindications have not been reported.

How to treat pain with Q.Light®

General pain care

For optimal results the Q.Light® deep red beam pain care therapy should be applied on a daily base. The average dose should be at least 12 J/cm². The light beam is directed at a right angle to the treatment area.

Q.Light® PAIN CARE therapy can be an ideal complementary treatment to a variety of pain management programs.

The patient is irradiated per treatment only 5-10 minutes by Q.Light® PAIN CARE system, ideally twice a day. In acute cases, three to four times per day. The treatment distance is about 10-40 cm.

For the treatment of joints, the treatment time should be extended per treatment safely up to 20 min. The minimum treatment distance is 10 cm.
Q.Light® Lighttherapy for the general treatment of Seasonal Affective Disorder - SAD

The Q.Light® SAD CARE system is specially designed for the application of neurological treatments in medical practices, clinics, specialized treatment centers, nursing homes/services and for the treatment at home.

The main applications for the Q.Light® SAD CARE system are:

• Seasonal Affective Disorder – SAD
• Depressions
• Burn Out

For neurological treatment, the SAD CARE module is used:

Q.Light® PRO UNIT

Q.Light® SAD CARE module

Technical data of Q.Light® SAD CARE module

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spectrum</strong></td>
<td>420 – 780 nm</td>
</tr>
<tr>
<td><strong>Polarization</strong></td>
<td>≥ 98 %</td>
</tr>
<tr>
<td><strong>VIS emission</strong></td>
<td>Wavelength of 420 – 780 nm</td>
</tr>
<tr>
<td><strong>Infrared emission</strong></td>
<td>No Infrared-radiation</td>
</tr>
<tr>
<td><strong>UV emission</strong></td>
<td>No UV-radiation</td>
</tr>
<tr>
<td><strong>Light temperature</strong></td>
<td>4700 K</td>
</tr>
<tr>
<td><strong>CE Mark</strong></td>
<td>0197</td>
</tr>
</tbody>
</table>

stabilized hormone system
Light quality & power density of Q.Light® SAD CARE module

Q.Light® emission spectrum with patented light source technology

Transmission in %

Q.Light® - treatment parameters & treatment dose in min. for Q.Light® SAD CARE module

<table>
<thead>
<tr>
<th>Device</th>
<th>Treatment-distance</th>
<th>Treatment-diameter</th>
<th>Lux</th>
<th>Therapy dose in min.</th>
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<tbody>
<tr>
<td>Q.Light® PRO UNIT</td>
<td>20 cm</td>
<td>20 cm</td>
<td>2'500</td>
<td>60 - 90</td>
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<tr>
<td></td>
<td>10 cm</td>
<td>15 cm</td>
<td>10'000</td>
<td>30</td>
</tr>
</tbody>
</table>

Scientific research on Seasonal Affective Disorder

Light suppresses melatonin secretion in humans

A description of the syndrome and preliminary findings with light therapy
Resenthal NE, Sack DA, Gillin JC, et al. Seasonal affective disorder. Published: Arch Gen Psych. 1984;41:72-80

Canadian consensus for the treatment of seasonal affective disorder
Lam RW, Levit A (eds). Canadian J of Diagnosis 1998; Supplement; 2 – 15:

Lichttherapie 3. edition

Beginning to see the light.

Seasonal Affective Disorder and Beyond: Light treatment for SAD and non SAD conditions
Neuroimmunomodulating effects induced by visible light

The immune system is susceptible to a variety of stresses. Recent work in neuroimmunology has begun to define how mood alteration, stress, the seasons, and daily rhythms can have a profound effect on immune response through hormonal modifications. Central to these factors may be light through an eye-brain hormonal modulation.

By human beings, only visible light (380-780 nm) is received by the retina of the eye. This light energy is then transduced and delivered to the visual cortex and, by an alternative pathway, to the suprachiasmatic nucleus (SCN), the hypothalamic region that directs circadian rhythm. Visible light exposure also modulates the pituitary and pineal glands, leading to neuroendocrine changes. Melatonin, norepinephrine and acetylcholine decrease with light activation, whereas cortisol, serotonin and dopamine levels increase.

The synthesis of vasoactive intestinal polypeptide (VIP), gastrin releasing peptide (GRP) and neuropeptide Y (NPY) has been shown to be modified by light. These induced neuroendocrine changes can lead to alterations in mood and circadian rhythm as well as immune modulation. An alternative pathway for immune modulation by light is through the skin. Visible light can penetrate epidermal and dermal layers of the skin and may directly interact with circulating lymphocytes to modulate immune function.

It is therefore important for treatment to control the intensity, dose and wavelength of emitted light.
Therapeutic guidelines for the treatment of Seasonal Affective Disorder – SAD

1. Encourage daily walks outdoors; the patient may look up at the sky but never directly at the sun. Enhance indoor lighting with regular lamps and fixtures.

2. Set a timer on a light to go on early in the morning in the patient’s bedroom. Consider a dawn simulator for a more naturalistic artificial dawn.

3. Initiate Q.Light® therapy with 10,000 lux, starting with 30 minutes ideally in the morning, not later than noontime. Increase the duration if symptoms become more severe, up to 45 minutes per day.

4. Aerobic exercises, preferably in combination with exposure to bright light, may be quite helpful.

5. To help the patient manage stress, suggest vacations (preferably in the south) at strategic times, and provide support, counseling and therapy.

How to treat SAD with Q.Light®

For optimal results with Q.Light® SAD CARE it is important to apply an effective dose. To receive adequate biological response an dose is applied to the eyes of approx. 30 min. at 10,000 Lux. The light beam is directed at a right angle to the face, ideally with open eyes.

The treatment should be performed daily.

Some studies have reported positive responses in patients with non-seasonal depression, premenstrual syndrome (late luteal dysphoria), bulimia, alcohol withdrawal symptoms and Burn Out. Beneficial results were also obtained at the treatment of insomnia and jet leg.
Q.Light® Phototherapy for the treatment of Acne

The Q.Light® ACNE CARE system is specially designed for the treatment of mild and moderate acne in medical practices, clinics, specialized treatment centres, beauty salons and for treatment at home.

The main applications for the Q.Light® ACNE CARE system are:

- mild and moderate
  - Common acne
  - Acne Vulgaris
    - Acne Comedonica
    - Acne Papulopustulosa
    - Acne Conglobata

For acne treatment, the ACNE CARE module is used:

**Technical Data of Q.Light® ACNE CARE module**

<table>
<thead>
<tr>
<th>Spectrum</th>
<th>385 – 1700 nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polarization</td>
<td>≥ 98 %</td>
</tr>
<tr>
<td>ViS emission</td>
<td>Wavelength of 385 – 500 nm</td>
</tr>
<tr>
<td>Infrared emission</td>
<td>Near-infrared radiation of 780 – 1700 nm</td>
</tr>
<tr>
<td>UV emission</td>
<td>No UV-radiation</td>
</tr>
<tr>
<td>Light temperature</td>
<td>N.A.</td>
</tr>
<tr>
<td>CE Mark</td>
<td>0197</td>
</tr>
</tbody>
</table>

excites porphyrin
Light quality & power density of Q.Light® ACNE CARE module

Q.Light® emission spectrum with patented light source technology

Q.Light® - treatment parameters & treatment dose in min. for Q.Light® ACNE CARE module

<table>
<thead>
<tr>
<th>Device</th>
<th>Polarization-degree</th>
<th>Treatment-distance</th>
<th>Treatment-diameter</th>
<th>Therapy dose in min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.Light® PRO UNIT</td>
<td>≥ 98 %</td>
<td>30 cm</td>
<td>8 – 30 cm</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 cm</td>
<td>7 – 20 cm</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 cm</td>
<td>5 – 10 cm</td>
<td>6</td>
</tr>
</tbody>
</table>

Scientific research on acne

An action spectrum for blue and near ultraviolet inactivation of Propionibacterium acnes; with emphasis on a possible porphyrin photosensitisation.
Kjeldstad B, Jhonsson
Photochemistry-Photobiology 1986: 43(1); 67-70

Singlet oxygen (1 delta g) generation from coproporphyrin in Propionibacterium acnes on irradiation.
Arakane K, Ryu A, Hayashi C, Masunaga T, Schinmoto K, Mashiko S, Nagano T, Hirobe M.

Effect of Visible Light on Reactive Oxygen Species Production
R. Lubart, 1 H. Friedmann, 1 R. Lavie, 1 N. Grossman, 2 M. Sinyakov and S. Belotsky
Department of Chemistry and Physics, Department of Life Sciences
Bar-Ilan University, Ramat-Gan 52900, Israel

Visible light promotes proliferation of normal skin cells

Improvement of rheologic parameters, ligand- and oxygen-binding capacity of erythrocytes of circulating blood after exposure of the body surface to visible polarized light.
Details about Acne
Cosmetic medicine, also called cosmetology or dermatocosmetics, deals with skin disorders. Dermatocosmetic treatments rank very highly, as they support medical treatments, occasionally even contributing decisive elements to their success. A very good example for skin disorders that both physicians and beauticians are frequently confronted with is common acne or acne vulgaris:

Common acne
Common acne is one of the most widespread skin disorders. It typically begins during puberty, often - but not always - subsiding when patients are in their thirties. Depending on the severity of the disorder, acne vulgaris can take on three different forms:

Acne comedonica
Acne comedonica is characterized by the predominant presence of open and closed comedones appearing in varying numbers and intensities, but mainly in the facial region, which is very distressing for most patients.

Acne papulopustulosa
With the inflammation progressing, painful papules tend to appear, often leaving behind visible scars after healing and thus provoking significant emotional stress.

Acne conglobata
The severest form of common acne is acne conglobata. Acne conglobata is characterized by the concurrent presence of comedones, pustules, indurated papules and abscesses with interconnecting sinuses that affect large skin regions. They develop on the back and the nape; in the latter case, it’s called acne inversa. Patients are generally “stigmatized” by numerous scars that can be very pronounced, even disfiguring.

The phototherapy with a range of 385 - 500 nm and 780 - 1700 nm (red & blue) is proving to be a very successful method of treatment against acne.

Significant treatment results with Q.Light® ACNE CARE

before

after phototherapy

before

after phototherapy

regulated photomodulation
Effectiveness of the Q.Light® phototherapy for Acne

Acne is a dermatological disease that interests about 40% of the population between 12 and 30 years.

Q.Light® ACNE CARE has been specially designed for the treatment of acne. Due to the concentrated spectrum between 385-500 nm, the additional use of near-infrared radiation and power density, optimal treatment results are achieved.

As part of its reproduction and metabolism process, the Propionil- bacterium Acnes (P. Acne bacteria) releases a certain pigment called porphyrin. Porphyrin molecules, once absorbing photons, become chemically active and transform into a state of aggregation that can result in several formations. One of the formations is a free oxygen radical that attacks the cell membrane and leads to the destruction of the P. acne bacterium. Like any other photochemical reaction, the efficacy of the process is determined by the production rate of excited porphyrin molecules, influenced by concentration of porphyrin, concentration of photons and the wavelength of the photons.

How to treat acne with Q.Light®

Q.Light® ACNE CARE with specified spectrum (blue range of light and the high intensity of the IR irradiation) has a favorable influence on acne. Scientific studies and empirical reports show individual cases of acne to be significantly reduced or even completely healed by regular exposition to Q.Light®. As individual treatment sessions are very short, Q.Light® phototherapy can easily be integrated into traditional - local or systemic - regimens of acne therapy. For optimal results it is recommended to clean the area to be treated with a mild cleanser. Then direct the Q.Light® ACNE CARE beam in a right angle to the treatment area. The average dose applied is 9.6 J/cm² on a daily base. The treatment time per session is 10 minutes with 40 mW/cm² = treatment distance of approx. 20 cm.
Q.Light® Phototherapy for general wound care and treatment of difficult healing wounds

The Q.Light® WOUND CARE system is specially designed for the application of wound care treatments in medical practices, clinics, specialized treatment centres, nursing homes/services and for treatment at home.

The main applications for the Q.Light® WOUND CARE system are:

- Stasis Ulcers / Leg Ulcers
- Decubitus Ulcers / Pressure sores
- Diabetic Gangrene
- Surgical Wounds
- Injury Wounds
- Burns

For wound treatment, the WOUND CARE module is used:

Q.Light® PRO UNIT

Q.Light® WOUND CARE modules

Technical Data of Q.Light® WOUND CARE module

<table>
<thead>
<tr>
<th>Spectrum</th>
<th>385 – 1700 nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polarization</td>
<td>≥ 98 %</td>
</tr>
<tr>
<td>ViS emission</td>
<td>Wavelength of 385 – 780 nm</td>
</tr>
<tr>
<td>Infrared emission</td>
<td>Near-infrared radiation of 780 – 1700 nm (optional)</td>
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<tr>
<td>UV emission</td>
<td>No UV-radiation</td>
</tr>
<tr>
<td>Light temperature</td>
<td>4700 K</td>
</tr>
<tr>
<td>CE Mark</td>
<td>0197</td>
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</table>

activates microcirculation
Light quality & power density of Q.Light® WOUND CARE module

Q.Light® emission spectrum with patented light source technology

Relative Transmission in %

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Filter excl. IR</th>
<th>Filter incl. IR</th>
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</thead>
<tbody>
<tr>
<td>385</td>
<td></td>
<td></td>
</tr>
<tr>
<td>780</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1700</td>
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</table>

Q.Light® - treatment parameters & treatment dose in min. for Q.Light® WOUND CARE module

<table>
<thead>
<tr>
<th>Device</th>
<th>Polarization-degree</th>
<th>Treatment-distance</th>
<th>Treatment-diameter</th>
<th>Therapy dose in min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.Light® PRO UNIT</td>
<td>≥ 98 %</td>
<td>30 cm</td>
<td>8 – 30 cm</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>20 cm</td>
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<td></td>
<td>10 cm</td>
<td>5 – 10 cm</td>
<td>6</td>
</tr>
</tbody>
</table>

Scientific research on wound healing

The effect of polarized-light on wound healing
Department of Plastic Surgery, University Hospital Gent, Belgium
Published: European Journal of Plastic Surgery – 2000

A conservative approach for deep dermal burn wounds using polarised-light therapy
Department of Plastic Surgery, University Hospital Gent, Belgium
Published: British Journal of Plastic Surgery – 2002

On the mechanism of enhancement of wound healing by visible incoherent polarized light: stimulation of the human keratinocyte and fibroblast proliferation in vitro by soluble factors of the circulating blood.
M.I.Blinova, K.A.Samoilova, N.M.Yudintzeva, N.M.Kalmykova:

Effect of NASA Light-Emitting Diode (LED) Irradiation on Wound Healing.
Systemic mechanisms of anti-inflammatory, immunomodulating, wound-healing effects of phototherapy with visible and near infrared spectrum

Recent research on pain, even in connection with the treatment of wounds, have shown that the visible radiation on the microvasculature of the skin affects the total volume of blood in the body. Already after a short treatment with a dose of 12 J/cm², at a wavelength of 400-1700 nm and a degree of polarization of 98 %, there is a complete photomodulation within 90 minutes. Continuation of changes are observed at a slower rate, for up to 24 hours after irradiation. The treatment result can be summarized as the following:

- Immediate effect on blood changes are due to transcutaneous photo-modification with a fast (30-90 minutes) translation of light-induced changes to the whole circulating volume of blood.
- Immediate changes in blood cells and plasma of the entire circulating blood.
- Increased functional activity of monocytes, granulocytes, lymphocytes, platelets.
- Rapidly improves oxygen flow- and transport properties of erythrocytes.
- Increased lipid peroxidation in plasma and the membrane of the erythrocytes.
- Slight positive change in blood clotting.
- Significant reduction in the plasma content and proinflammatory cytokines and increased levels of IFN-g respectively IL-10.
- Increased rate of wound healing and improved growth promoting plasma properties in relation to the keratinocytes, endotheliocytes, fibroblasts and radiation-damaged autologous cells.

The changes demonstrate the regulative effect of phototherapy and their therapeutic effect for the treatment of wounds. Phototherapy has been successfully used in chronic wounds, as well as slow-healing wounds.
General information about Q.Light® wound treatment

Q.Light® Phototherapy is efficacious in the different phases of wound healing, arresting inflammations, alleviating pain, activating the immune response, improving perfusion and revascularization, increasing lymphatic drainage and generally improving the metabolism.

All of these effects support the body’s power of self-healing. In the case of chronic wound healing disorders, they have a significant positive influence on pathological wound environments. Wounds can heal if newly formed capillaries increase the blood supply, if increased lymphatic drainage dissipates edemas, if an improved immune response fights infections and metabolism is reactivated. Thus, Q.Light® Phototherapy has a systemic effect, promoting wound healing by restoring formerly disturbed metabolic and regenerative processes.

The Q.Light® WOUND CARE spectrum is clearly defined, without ultraviolet rays and provides consistent energy in the range 385 - 1700 nm, polarized. The dose may be adjusted individually. The radiation emitted by Q.Light® WOUND CARE system has a power density of about 40 mW/cm² at the standard distance of 20 cm and treatment penetrates deep into the tissue. It is also possible to treat infected wounds or burns without infrared radiation (Filter module Q.Light® WOUND CARE excl. IR).

Q.Light® Phototherapy can be optimally combined with standard wound care and thus represents an integratable treatment with a significant improvement in wound healing. Side effects or contraindications have not been reported.

How to treat wounds with Q.Light®

General wound care
For optimal results the Q.Light® WOUND CARE therapy applied on a daily basis. The average dose should be at least 12 J/cm², that is 10 minutes at a power density of 40 mW/cm² at a therapy distance of about 20 cm. The light beam is directed at a right angle to the treatment area. Only after wounds have been properly cleansed, the patient’s regenerative capacity is activated in the wound area.

The subsequent healing process of the wound takes place in three interlinking phases:

- endogenous purification
- granulation
- epithelialization

Burn wounds
The Q.Light® WOUND CARE therapy in many cases reduces the need for surgery in the treatment of deep dermal burns, if applied immediately after submission. Within this group of patients, the use of polarized light accelerates wound healing and allows very early pressure therapy, thus reducing hypertrophic scarring and contractures. No extension of the hospital stay is required because of the better aesthetic and functional results, this especially applies to burns of the hands. Phototherapy with polarized radiation has become the preferred method of therapy for the treatment of deep dermal burns in special clinics.
The Q.Light® PRO UNIT offers special dichroic colour filter modules which allows to use the device also for colour therapy. The brilliant colours are achieved by the patented light source that is powered by the Q.Light® PRO UNIT.

**Filter Module RED**

**Characterization**
- activity and warmth

**Global effect**
Activates energy reserves in case of mental and physical exhaustion

**Filter Module ORANGE**

**Characterization**
- Activity and inspiration

**Global effect**
Stimulates creativity and self-respect especially under stress and depression

**Filter Module GREEN**

**Characterization**
- Balance and hope

**Global effect**
Boosts equilibrium, composure and stamina in weak and restless situations

**Filter Module BLUE**

**Characterization**
- Coolest and most relaxing colour

**Global effect**
Reassures and relaxes nervous irritability and stressful strain of all nature

**Filter Module VIOLET**

**Characterization**
- Individualism and intuition

**Global effect**
Unblocks, relaxes and revives in hopeless moments

There are many ways and techniques of how to apply Q.Light® colour light to the human body for therapeutic purposes. It is advisable to visit colour therapy education courses or seminars. For first information visit: www.QLight.info
**Quality certificate**


**Free Sales Certificate**

This certification approves Q.Products AG to manufacture and sell Q.Light® therapy devices internationally.
Q.Products AG – biotechnology & photomedicine

Q.Products AG develops and manufactures specialized phototherapy devices for professional application and for self medication at home. Additionally to our Q.Light® PRO UNIT we also manufacture the following specialized devices:

- Q.Light® ACNE CARE
- Q.Light® PAIN CARE
- Q.Light® WOUND CARE
- Q.Light® SAD CARE