

# HANDY-CURE

## Summary of scientific evidence

Information in this article was taken from a document prepared by **Dr Rémy Guibert**, MD MSc about TerraQuant, another device manufactured by Medical Quant which contains the same modalities and the same technology as Handy-Cure.

Handy-Cure is a medical device which combines together **low level pulse laser** radiation (Laser Class 1M, power 0.4 to 1.4 mW, radiation 900+/-50 nm), **infrared** radiation (power 30-90mW, radiation 860-960 nm), **visible red light** (power 2-10mW, radiation 600-740 nm) and **static magnetic fields** (25-45 MT). Medical Quant manufactures the only devices available today which provide the synergic therapeutic effects of those four modalities, incorporating all these radiances in one apparatus. This enables Handy-Cure to achieve rapid and efficient clinical effects within a relatively short time.

Quantum Medicine is particularly effective in situations where cell tissue has become inflamed. Inflammation of cell tissue is caused by reduced microcirculation, which changes the quantity of blood supply to the cells, resulting in ischemic injury. Any influence that can shorten the duration of the ischemic state will have a beneficial effect on the course of the disease and the accompanying pain.

Quantum Medicine improves microcirculation, which removes toxic waste products from the site, and improves the supply of oxygen to the hypoxic cells, all within a few hours of irradiation to the painful tissue. As a result, the tissue is cured and the pain disappears. These outcomes are achieved through chemical processes in the cells that are responsive to bio-photons, leading to renewed energy production (ATP) and restoration of all impaired cellular functions. Quantum Medicine is a non-invasive, drug-free, pain-free and surgery-free therapy that is beginning to revolutionise healing in modern medicine.

Use of Handy-Cure increases the speed, quality and strength of cell tissue repair, increases blood supply to the affected area, stimulates the immune system, stimulates nerve function, develops collagen and muscle tissue, helps generate new healthy cells and tissue and promotes faster wound healing and clot formation. This method can even provide significant results for the elderly, or patients suffering from long term illnesses or cell damage, even in cases that were previously considered to be hopeless.

It is important to emphasise that therapy with Handy-Cure does not exclude other conventional medical treatment. On the contrary combining the two approaches may result in rapid recovery and may enable the reduction in doses of conventional drug consumption.

### Handy-Cure

- Can be applied without touching the skin;
- Is easy to use, requires minimal training;
- Offers a diversity of frequencies for different clinical conditions

### Safety

Handy-Cure is safe. Over 2000 studies on LLLT have shown that it is safe. Handy-Cure is classified as a Class 1 laser device. Class 1 laser devices present minimal potential for harm to the user and are classified as NSR (Non Significant Risk) by the FDA. Out of additional caution, it is recommended not to direct Handy-Cure on a pregnant womb, on a pacemaker, and to use protective eyewear for treatments on face or eyes.

## **PHYSIOLOGICAL PROPERTIES OF TERRAQUANT**

### **LOW-LEVEL LASER THERAPY (LLLT)**

LLLT is now a well-established procedure with strong scientific evidence based physiological and clinical applications.

#### **Basic laser physics:**

Low level lasers are commonly used in today's world: reading bar-codes on products at check out counters, laser printers, compact disc players.

Laser means Light Amplification by Stimulated Emission of Radiation. The Laser light beam, unlike regular light, is coherent which means that the photons are synchronized. Laser light is monochromatic which means it is of one pure colour (one single wavelength).

Beneficial wavelengths are in the visible (Red approximately 700 nm) and near infrared ranges (near Infrared wavelengths range from 700 nm to 5,000 nm or 5  $\mu$ m). TerraQuant uses Red Light radiation of 600 to 740 nm wavelengths, Infrared radiation of 860 to 960 nm wavelengths and Laser radiation of 900+/- 50 nm wavelengths, all of which are well within very safe ranges. Visible and near infrared ranges wavelengths are safer than microwaves and radio waves that are usually considered safe. It is the wavelengths encountered with the ultraviolet, x-rays, gamma and cosmic rays that are damaging.

Power Density (PD), or light concentration is measured in watts per squared centimetre ( $W/cm^2$ ). Low-Level Lasers (or Soft Lasers, or Cold Lasers) use a power from 1 to 3 milliwatts (mW). TerraQuant has a laser Power of 1.4 mW therefore well below risk threshold. Lasers do not even have a warming affect unless they are operated above 5  $W/cm^2$ . Lasers with an ability to cut (surgical lasers or lasers used in the industry to cut steel) have a Power Density (PD) from 300 to 10,000  $W/cm^2$ .

Low-level lasers today are manufactured using semi-conductors, which are computer-like chips grown from various pure elements or combinations thereof. Combining the elements of InGaAlP makes visible light in the range of 630 to 685 nm; combining GaAlAs produces light in the range of 780 to 870 nm; and, combining GaAs produces infrared laser diodes in the 900nm range.

#### **Combination of several light radiation modalities**

Visible lights such as Red light have a shallow penetration (1 to 3 mm.) which is limiting as to their benefits. Infrared light has a deeper penetration (10 to 15 mm). However using several light modalities concurrently, such as Handy-Cure enables a much deeper penetration of the beneficial effects of all light modalities (up to 8 to 10 cm).

#### **Main biological effects of laser light**

*(Extracted from the texts of a very large body of scientific evidence).*

For nutrients to transfer through the cell membrane, that cell membrane needs to be polarized. An injured cell loses polarization of its membrane. Low Level Laser Therapy facilitates cell membranes to regain normal polarization and beneficial nutrients and molecules can be transferred to where they are needed. Research has shown that low level laser therapy can increase cellular ATP (body fuel) by as much as 150%.

The primary demonstrated effect of LLLT is a local time response to direct irradiation and comprises vasodilatation with increased circulatory flow; enhanced lymphatic drainage, increased macrophage and fibroblast activity, and improved metabolic function of depressed or damaged cells.

Delayed or secondary response consists of a systemic effect caused by circulating photoproducts of irradiation in the blood and lymphatic systems. Increased plasma concentration of certain types of prostaglandins, enkephalins and endorphins have all been identified and play a major role in the mechanism of reduction of inflammation, pain attenuation and wound healing.

Handy-Cure's therapeutic action operates via one of the most fundamental molecular mechanisms in the human body, Adenosine Tri Phosphate (ATP). Mitochondria of all living cells are often termed cellular "powerhouses" because of their involvement in converting chemical energy of nutrient molecules into the chemical energy of ATP. The chemical process of adding an inorganic phosphate to a molecule is called phosphorylation. The phosphorylation process in the mitochondria is composed of cytochromes, which are chromophores, molecules that respond to light radiance such that are incorporated in the TerraQuant. The phosphate groups of ATP, especially the terminal one, can be transferred by means of enzymes to other molecules in order to increase their reactivity. In this way, ATP links the energy-producing aspects of cellular biochemical reactions to the energy requiring aspects of biological work, such as movement, protein synthesis and active transport.

In a recent study<sup>1</sup>, brain tissue was irradiated with near-infrared laser (830 nm) in vitro, and the content of ADP and ATP were monitored in the tissues. A rise in ATP content of the brain tissue was observed, thus confirming the effect of LLLT on ATP production. Increased cellular ATP enables the ischemic cells in the damaged tissue to heal and to attain their normal functions.

## PAIN MANAGEMENT

### MUSCULOSKELETAL PAIN SYNDROMES (CHRONIC AND ACUTE)

#### SCIENTIFIC EVIDENCE

*The clinical trials reported in this section have sound methodologies, at least a control group and all have been published in peer review scientific journals.*

LLLT is applied to a wide variety of acute and chronic musculoskeletal pain syndromes whose main presenting symptom is pain (back pain, muscle spasm, tendonitis, tennis elbow, carpal tunnel syndrome, fibromyalgia), dermatologic conditions (telangiectasis and low extremities ulcers).

LLLT has been shown to be effective in a variety of **musculoskeletal conditions and associated pain** presentations<sup>ii</sup>.

In **Rheumatoid Arthritis**, LLLT can benefit not only the pain of acute small joint inflammation but also the chronic pain<sup>iii</sup>. In a review article on rheumatology (3), some 18 papers were considered. All studies involved double-blind trials with LLLT in chronic rheumatoid, and reported significant improvement in pain (80% success rate in relieving pain). Upon comparing LLLT to a similar rate of pain attenuation using anti-inflammatory drugs (NSAIDs), the LLLT was free of any side-effects while 20% of patients treated with NSAIDs suffered unacceptable side-effects of medication<sup>iv</sup>. In another study of 170 patients with rheumatoid arthritis using LLLT (4), pain attenuation of up to 90% was noted<sup>v</sup>.

In a report of 1,000 treatments with LLLT (830 nm) for a wide variety of **chronic pain** syndromes, an overall reduction in pain levels of 70% was established<sup>vi</sup>.

Trellis et al (7) used LLLT for **osteoarthritis** of the **knee** in 40 patients. He reported a significant reduction of 82% of the patients with improved joint mobility.<sup>vii</sup> Among 36 randomized patients, with pain caused by **cervical osteoarthritis**, those who received Infra-Red and Low Level Laser treatment improved 75% compared with the group receiving mock treatment (31%)<sup>viii</sup>. Similarly, a study of 60 patients with **Cervical Osteoarthritis**, Low Pulsed Laser was successful in relieving pain and in improving function<sup>ix</sup>.

The results of a study show that **cervical myofascial pain** is significantly improved with 3-months treatment with Diode laser<sup>x</sup>. A similar successful LLLT treatment has been described for **whiplash injuries**<sup>xi</sup>.

In a randomized study with 30 patients with **supraspinatus** or **bicipital tendonitis**, the results demonstrated the effectiveness of laser therapy in **tendonitis of the shoulder**<sup>xii</sup>. Another study with a patient population (n = 324), with either **medial epicondylitis** (Golfer's elbow; n = 50) or **lateral epicondylitis** (Tennis elbow; n = 274), and randomly allocated, provides further evidence of the efficacy of LLLT in the management of lateral and **medial epicondylitis**<sup>xiii</sup>.

Treatment with low-level laser therapy (LLLT) was shown effective in treating **Carpal Tunnel Syndrome** pain<sup>xiv</sup>. Another study showed significant decreases in McGill Pain Questionnaire scores. Median nerve sensory latency, and Phalen and Tinel signs were observed after treatment series with Low Level Laser Therapy. Patients could perform their previous work (computer typist, handyman) and were stable for 1 to 3 years<sup>xv</sup>.

In **acute trauma** there is a soft tissue injury comprising swelling, haematoma, pain and reduced mobility. Sporting injuries and domestic accidents usually involve damage to muscles, joint ligaments and tenclass. In the absence of bone fracture or other injury demanding priority treatment, LLLT should be instituted at the earliest opportunity. Kumar reported a comparative study in 50 patients with **inversion injuries of the ankle**. He found that compared to conventional physiotherapy, the

LLLT treated patients showed a more rapid resolution of symptoms and an earlier return to full weight-bearing<sup>xvi</sup>.

**Fibromyalgia** (FM) is characterized by widespread pain in the body, associated with particular tender points. It is often accompanied by disturbed sleep patterns, fatigue, headaches, irritable bowel and bladder syndrome, morning stiffness, anxiety and depression. FM can cause a high level of functional disability and have a significantly negative effect on quality of life. One study suggests that "Laser Therapy is effective on pain, muscle spasm, morning stiffness, fatigue, depression and total tender point number in Fibromyalgia"<sup>xvii</sup>.

A randomized controlled study with 63 patients with **non-radiating low back pain** showed that LLLT significantly improved pain and function<sup>xviii</sup>

***In summary, the bulk of published work to date supports the use of LLLT for treatment of a variety of musculoskeletal conditions and associated pain. Moreover, the LLLT proved to be not only more effective than conventional methods, but more economical as well. The added advantage of absence of side effects, non-invasive nature of therapy and the ease of application, ensures good patient acceptance of the treatment modality.***

## BONE REPAIR

In an experimental animal study, the effect of LLLT on **bone repair** was evaluated by computerized morphometric assessment<sup>xix</sup>. The assessment was carried out at different time intervals following fractures. It was observed that LLLT increased bone repair primarily at early stages of the healing process. This finding is in agreement with previous study that showed **increased osteoblastic activity and increased number of blood vessels and the amount of mineralized bone at the fracture site** in response to LLLT<sup>xx</sup>.

## CASE STUDIES

(These case studies report treatment of various musculoskeletal conditions by using TerraQuant. However, use of Handy-Cure in these situations would have achieved the same results.)

### CASE # 1

73 year old female with a painful left shoulder. Ultrasound of shoulder demonstrated bursitis and fluid around the biceps tendon. Pain worse at night. Limited range of movement. TerraQuant treatment was commenced daily for 6 days with notable improvement in level of pain. She was virtually pain free during the day with reducing night pain and with increasing range of movement of the shoulder joint.

### CASE # 2

42 year old female with right lateral epicondylitis, pain extending into the extensor area of the forearm (out cropping muscles). She was instructed in the use of a Tennis Elbow strap, massage of the extensor muscles and stretching of the muscle bellies. She also was asked to use a topical anti-inflammatory ointment. After presenting with extreme pain she reported increasing benefit after the first 4 treatments with TerraQuant and was 90% -95% pain-free after 7 treatments. She was encouraged to continue other supportive measures.

### CASE # 3

73 year old female presented with severe pain in the left calf following an episode of prolonged cramp whilst in bed. She was seen to be extremely tender over the medial head of the Gastrocnemius muscle and responded well to 4 treatments with TerraQuant.

**CASE # 4**

63 year old insulin dependent diabetic with severe degenerative disease of the right knee waiting for knee replacement. Awaiting hospital admission she received daily and alternate day TerraQuant treatment over 7-10 days on 2 occasions to buy time until surgery was carried out. Post operatively she was using an exercise bicycle during her rehabilitation and developed muscle strain of the upper anterior compartment muscles. Also post operatively she developed a pressure ulcer on her other heel. Her anterior compartment strain improved daily with 5 TerraQuant treatments and the moderately deep pressure ulcer which had been dosing slowly showed rapid improvement from 1.5cms to 2mm in 7 days and was closed by the 12th day.

**CASE # 5**

25 year old male who sustained a mid shaft fracture of the humerus on 20th July in Darwin whilst pitching a baseball. He was treated conservatively in Darwin. After 6 weeks he came to Melbourne and complained of pain around the upper arm and in the cubital fossa area. After investigating him for osteoporosis (neg) he was started on TerraQuant therapy and given exercises to increase strength around the elbow and shoulder. He showed good recovery after 14 days of treatment with regards to pain but returned 1 week later requesting further treatment from which he derived significant improvement.

**CASE # 6**

32 year old male knocked right knee over upper margin of Patella. He complained of pain and weakness on extension of knee. After 3 TerraQuant treatments pain and weakness had subsided.

**CASE # 7**

57 year old female had a large can of tinned fruit dropped onto dorsum of right foot. Patient on Warfarin. She developed pain, swelling (haematoma) over the dorsum of her foot. After 4 TerraQuant treatments she was able to walk comfortably with little pain on extension of ankle joint and toes.

**CASE # 8 Achilles Tendonitis**

Age 34 - The acute injury occurred while playing basketball, which he played only occasionally. The Achilles tendon was swollen and acutely painful at palpation. The patient was walking with moderate pain. Treatment consisted in three 10-minute sessions of TerraQuant (10 minutes @ 50Hz) within a week combined with Non Steroidal Anti-Inflammatory Drug (NSAID). At the end of the treatment the patient was able to walk freely, the Achilles tendon was not painful at palpation.

**CASE # 9 Achilles Tendonitis**

Age 78 – This patient had had bilateral Achilles tendonitis and bilateral plantar fasciitis for several weeks with increasing intensity. The pain had not been relieved with paracetamol. The injuries annoyed markedly this patient since he was responsible for the maintenance of his local bowling club and an ardent player. Treatment consisted of 6 sessions of TerraQuant combined with NSAID. Each TerraQuant session consisted of 10 minutes at 50Hz for each of the Achilles tendons and each of the plantar fasciitis. The TerraQuant sessions were distributed over a two weeks period. At the end of the treatment period this gentleman was pain free and fully enjoyed his bowling again.

**CASE # 10 Shoulder Bursitis**

Age 28 – The injury occurred at work while digging and shoveling heavy wet earthy clay, the shovel got stuck under a rock and this patient exerted undue force to try to lift the rock, which did not move an inch. This patient is very muscular and exercises regularly, including weight lifting. The biceps tendon was painful and there was limited abduction at 60 degrees and very limited internal rotation and forward flexion. An Ultrasound showed biceps tendon inflammation and partial tear. The treatment consisted of 4 sessions of TerraQuant (10 minutes @ 50Hz) with a prescription for NSAID and ice packs. He was assigned to light duties with a restriction on lifting no more than two kilos. The four sessions of TerraQuant were given over a 10 day period. At the end of the treatment, the patient was pain free and there was no limitation of movement and palpation was pain free.

**CASE # 11 Lateral Epicondylitis**

Age 43 – This electrician patient had been suffering from lateral epicondylitis for several months with increasing intensity not only while using his forearm but also at rest and even at night. Courses of NSAID taken intermittently had provided not substantial relief. The treatment consisted of 6 sessions of TerraQuant (10 minutes at 50 Hz) over a period of three weeks combined with 3 myotherapy treatments and a course of NSAID. After the three weeks of treatment, the patient was pain free both while using his arm and at rest and at palpation of the lateral epicondyle.

**CASE # 12 Hip Bursitis**

Age 72 – this retired woman was suffering from left hip pain that reduced her ability to go for long walks and also prevented her from sleeping on her left side. Getting up from a chair or her sofa was painful. Palpation of the great trochanter was painful and a left hip ultrasound confirmed a bursitis. The treatment consisted of eight treatments of TerraQuant (5 minutes variable frequency and 5 minutes at 50 Hz) over a three weeks period. At the end of the treatment, the patient was pain free and could enjoy her walks again. There was no pain at palpation and no limited range of movement of her left hip.

**CASE # 13 Coccyx Pain**

Age 84 - This patient had sustained a fractured coccyx several years before and remained very sore. She could not sit straight and not for long. Traveling by car was limited to a few kilometers because of the pain. Analgesics NSAID and acupuncture had had no effects. The treatment consisted of 12 sessions of TerraQuant (10 minutes at 5 Hz) over a four weeks period. After six treatments, this patient was able to sit straight albeit with bearable discomfort. After 12 treatments, she was pain free and could walk and travel by car without restriction.

**CASE # 14 Superficial Thrombophlebitis**

Age 54 – this patient had a superficial thrombophlebitis of the leg for several days. Treatment consisted of two TerraQuant sessions of 10 minutes at 1000Hz on two consecutive days. After the second treatment, the inflammation had disappeared and the leg was not sore.

**CASE # 15 Shingles**

Age 24 – This patient had developed herpes zoster on a thoracic dermatoma. He visited his family physician 6 days after the occurrence of symptoms. The treatment consisted of 4 sessions of TerraQuant (10 minutes at 1000Hz) over a ten day period with a prescription of tramadol and of paracetamol 500mg and 30 mg of codeine. After the treatments, the pain had reduced markedly and an NSAID was sufficient to control it. The skin lesion had almost disappeared.

## BIBLIOGRAPHY

- 
- i Mochizuki-Oda, N., *Neuroscience Letter*, 323:207, 2202
  - ii Simunovic Z. Laser Center, Locarno, Switzerland. *J Clin Laser Med Surg* 1996 Aug;14(4):163-7 Low level laser therapy with trigger points technique: a clinical study on 243 patients.. "LLLT suggests that the laser beam can be used as monotherapy or as a supplementary treatment to other therapeutic procedures for pain treatment".  
Publication Types: Clinical Trial Controlled Clinical Trial PMID: 9456632 [PubMed - indexed for MEDLINE]
  - iii Fulga C. N Antiinflammatory effect of laser therapy in rheumatoid arthritis.. *Rom J Intern Med* 1998 Jul-Dec;36(3-4):273-9
  - iv Gartner, *Laser Therapy*, 4:107, 1992.
  - v Asada et al, *Laser Therapy* 3:77, 1991.
  - vi Moore, in *Fontiers in Electro-optics*, 283, 1990.
  - vii Trellis et al, *Laser Therapy* 3:149, 1991.
  - viii Lewith GT, Machin D. A randomised trial to evaluate the effect of infra-red stimulation of local trigger points, versus placebo, on the pain caused by cervical osteoarthritis. *Acupunct Electrother Res* 1981;6(4):277-84
  - ix Ozdemir F et al. The clinical efficacy of low power laser therapy on pain and function in cervical osteoarthritis. *Clin Rheumatol* 2001;20(3): 181-4
  - x Ceccherelli F, Diode Laser in cervical myofascial pain: a double-blind study versus placebo. *Clin J Pain* 1989 Dec;5(4):301-4
  - xi Ohshiro, in *Low-reactive level laser therapy practical application*. , 103, Chichester, U.K., John Wiley & Sons, 1991.
  - xii England S, Farrell AJ, Coppock JS, Struthers G, Bacon PA. Low power laser therapy of shoulder tendonitis. *Scand J Rheumatol* 1989;18(6):427-31
  - xiii Simunovic Z, Trobonjaca T, Trobonjaca Z. Treatment of medial and lateral epicondylitis--tennis and golfer's elbow--with low level laser therapy: a multicenter double blind, placebo-controlled clinical study on 324 patients. . *J Clin Laser Med Surg* 1998 Jun;16(3):145-51
  - xiv *Arch Phys Med Rehabil* 2002 Jul;83(7):978-88 Carpal tunnel syndrome pain treated with low-level laser and microamperes transcutaneous electric nerve stimulation: A controlled study. Naeser MA, Hahn KA, Lieberman BE, Branco KF.
  - xv Naeser MA, Hahn KA, Lieberman BE, Branco KF. Carpal tunnel syndrome pain treated with low-level laser and microamperes transcutaneous electric nerve. *Arch Phys Med Rehabil* 2002 Jul;83(7):978-88 stimulation: A controlled study.
  - xvi Kumar et al, *Laser in Medical Science*, 298, 1988.
  - xvii Gur A et al. Efficacy of low power laser therapy in fibromyalgia: a single-blind, placebo controlled trial. *Lasers Med Sci* 2002;17(1):57-61
  - xviii Basford JR et al. Laser therapy: a randomised controlled trial of the effects of low intensity laser irradiation on musculoskeletal back pain. *Arch Phys Med Rehabil* 1999 Jun;80(6):647-52
  - xix Silva, A.N. et al, *J. Clin. Laser Med. Surg.* 20:83, 2002.
  - xx Treller, M.A. and Mayayo, E. *Laser Surg. Med.* 7:36, 1987