

Treatment Observation, Piano Hospital Biel (Switzerland)

Treatment Observations

The treatment observation below was conducted by Dr. med. Fiorenzo Angehrn (Piano hospital in Biel, Switzerland). The sponsor of the study was one of our equipment manufacturing partners, who allowed us to use their results for further publications. Please contact us directly if you have any further questions. We look forward to referring you to our partner!

Profile Dr. med Fiorenzo Angehrn

Dr. med Fiorenzo Angehrn performed a study using our collagen fluorescent lamps in the Piano Hospital in Biel (Switzerland), where he thoroughly observed and documented all research findings.

Dr. Angehrn is a surgeon and specialist in phlebology at the Piano Hospital. In addition, he is the manager and founder of the hospital (founded in 1987) as well as co-founder and president of the Swiss Association for Medical Anti-Aging.

The hospital's core competency lies in the diagnosis and therapy of surgical infections (especially for vascular diseases). The medical facility is also expert in pain therapy, physiotherapies and various anti-aging treatments.

Execution and Results - "Abstract":

As a specialist practitioner in the anti-aging industry and as an expert in the observation of connective tissue and collagen, Dr. Angehrn conducted a study in 2009. His intention was to thoroughly inspect and comprehensively document all skin and other physiological changes that occurred in his subjects.

Objective: To assess the efficacy of collagen fluorescent light therapy (600nm to 700nm region) in photo rejuvenation of skin.

Light Therapy Device: The research team used a full body collagen bed (similar to a conventional tanning bed) with 40 high performing fluorescent tubes (200W Art of Sun Collagen Plus10).

Methods: Based on the spectral radiometric measurement of the device, there was a calculated energy dose of 57,05 J/cm² in the visible light spectrum (400nm to 780nm wavelength), with peaks in the effective red light spectrum (600nm to 700nm).

Subjects: After screening for study inclusion, 51 subjects with light skin color were recruited (50 female, 1 male; age range 24 to 72; average age 52 years). Participants were educated about light therapy before the study started.

Treatment: Subjects were irradiated with 40 collagen fluorescent light sources (633nm region) for 20 minutes over a maximum time period of 10 weeks (2 – 3 exposures per week).

Treatment Observation, Piano Hospital Biel (Switzerland)

Documentation & Measurements

Prior to a subject's first exposure, the medical research team conducted the following measurements with Collagenous ICU® High Frequency Echo Sounder:

- collagen distribution in dermis
- skin density

Measurements were taken at the reference area (the inner side of upper arm). Further, the team used the Corneometer CM 820 PC to assess the participant's skin moisture content.

After 10, 20 and 30 sessions and partly on an on-going basis, Dr. Angehrn performed the following assessments:

- constant inspection of treatment results
- subject questionnaire to find out about patient's well-being and comfort with the treatment
- measurement of collagen distribution and density
- skin moisture measurement

Evaluation & Conclusion:

According to Dr. Angehrn collagen fluorescent light therapy for the purpose of skin rejuvenation represents an effective and acceptable method to build up collagen in the skin. His statement is based on the evaluation of the subjects' positive questionnaire responses as well as the results that have been measured with the ultra sound device Collagenous ICU® High Frequency Echo Sounder (Table I).

A meaningful and considerable improvement of the collagen structure in participants' skin was noticeable after 10 red light therapy sessions. The following anti-aging effects were confirmed by Dr. Angehrn:

- Vitalization of the skin
- Fortification and tightening of the skin
- Effective lifting
- Considerable reduction of fine lines and wrinkles
- Improvement in skin-moisture levels
- Improvement of skin imperfections



Before



After 18 treatment sessions

The most statistically significant results were reached after 30 sessions. The achieved cosmetic results after 20 to 30 sessions were positively valued by the test persons. All study participants confirmed: The

Treatment Observation, Piano Hospital Biel (Switzerland)

more light therapy sessions, the smoother their skin and the better or more satisfying the anti-wrinkle results (Table II).

Besides the cosmetic results, some participants reported other valuable therapeutic properties, which were also diagnosed by the research team: neurodermatitis, acne vulgaris and arthrosis responded positively to the light exposure. Although these observations do not have statistical significance at the moment, it shows that further studies should be conducted to explore the healing effect of collagen fluorescent lamps in the visible red light spectrum (600nm to 700nm).

Furthermore, all subjects reported a positive effect of their mood. It stabilizes and invigorates the body's rhythms. In general, all participants experienced the phototherapy as a positive sensation and reported substantially improved body conditions plus an increase in physical performance.

Conclusively, there is no doubt that the non-ablative approach of collagen fluorescent light therapy devices, when used properly and as directed by the manufacturer, have excellent potential in the treatment of wrinkles, tightening of the skin or improving skin-moisture levels. The application of collagen red light therapy has inaugurated a new and exciting era in anti-aging technology and offers a multi-purpose and inexpensive therapeutic method to skin rejuvenation.

Table I: Improvement in skin-moisture levels; measurements with Corneometer CM 820 PC

	Measurements after 10 sessions	
Skin-moisture level	22% improvement	6% statistically significant
	Measurements after 20 sessions	
Significant improvement and noticeable lifting effect in face, neck and décolleté area	26% improvement	47% statistically significant
	Measurements after 30 sessions	
Increased firmness and elasticity of entire body	38% improvement	44% statistically significant

Table II: Evaluation of continuous subject questionnaire

	Results after 10 sessions
Vitalization of skin on entire body	68%
	Results after 20 sessions
Significant improvement and noticeable lifting effect in face, neck and décolleté area	89%
	Results after 30 sessions
Increased firmness and elasticity of entire body	97%

Skin density and collagen measurement – Collagenous ICU® High Frequency Echo sounder

The test of the skin density (dermis) and the collagen structure was performed with the ultra sound measurement device Collagenous ICU® High Frequency Echo sounder.

Treatment Observation, Piano Hospital Biel (Switzerland)

The dermis retains its density and elasticity through the collagen type 1. Collagen consists of groups of white inelastic fibers with tensile strength. These include fine fibrils, which are made-up of even finer filaments to form a 3-dimensional network. The size of the tiny fibers are in the nm-area and only visible through an electron microscope. Due to the use of high frequency ultrasound, the Collagenous ICU® appliance can show the fine fibers.

The ultra sound waves are reflected by a lack of density in the fibers. They bounce back in the form of an echo. The more distinct the density differences, the richer the energy of the echo and the higher the amplitude in image A, also the brighter the associated point in image B. The diagram shows the thickness of the dermis in the reference image which is gender and age related (Table III).

Table III: Skin density and collagen distribution; measurements with Collagenous ICU® High Frequency Echo sounder

	Measurements after 10 sessions	
Skin density (diagram)	78% improvement	8% statistically significant
Collagen distribution	80% improvement	6% statistically significant

	Measurements after 20 sessions	
Skin density (diagram)	21% improvement	79% statistically significant
Skin density (diagram)	18% improvement	82% statistically significant

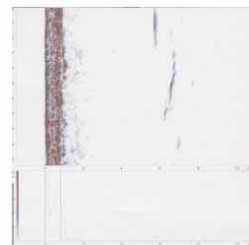
	Measurements after 30 sessions	
Skin density (diagram)	6% improvement	94% statistically significant
Skin density (diagram)	6% improvement	94% statistically significant



Before



After 30 treatment sessions



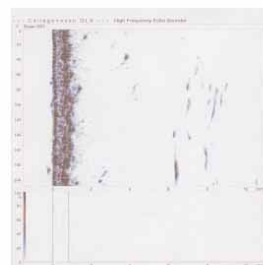
Measurement with Collagenous ICU® before



Before



After 30 treatment sessions



Measurement with Collagenous ICU® after