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Beijing Sincoheren Science and Technology Development Co.,Ltd.

Training for Nd:YAG Laser

Monaliza-2



Outline

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Part II

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Theory of selective photothermolysis (SP)

According to the biological characteristics of different tissues, the target tissues can selectively absorb specific wavelength laser, while the surrounding tissues do not absorb or only absorb a few laser. When the pulse width is shorter than or equal to the thermal relaxation time of the target tissue and the energy density is larger than the threshold required for the target tissue damage, the most effective treatment of the target tissue can be ensured, and the damage to the surrounding normal tissue is minimized.

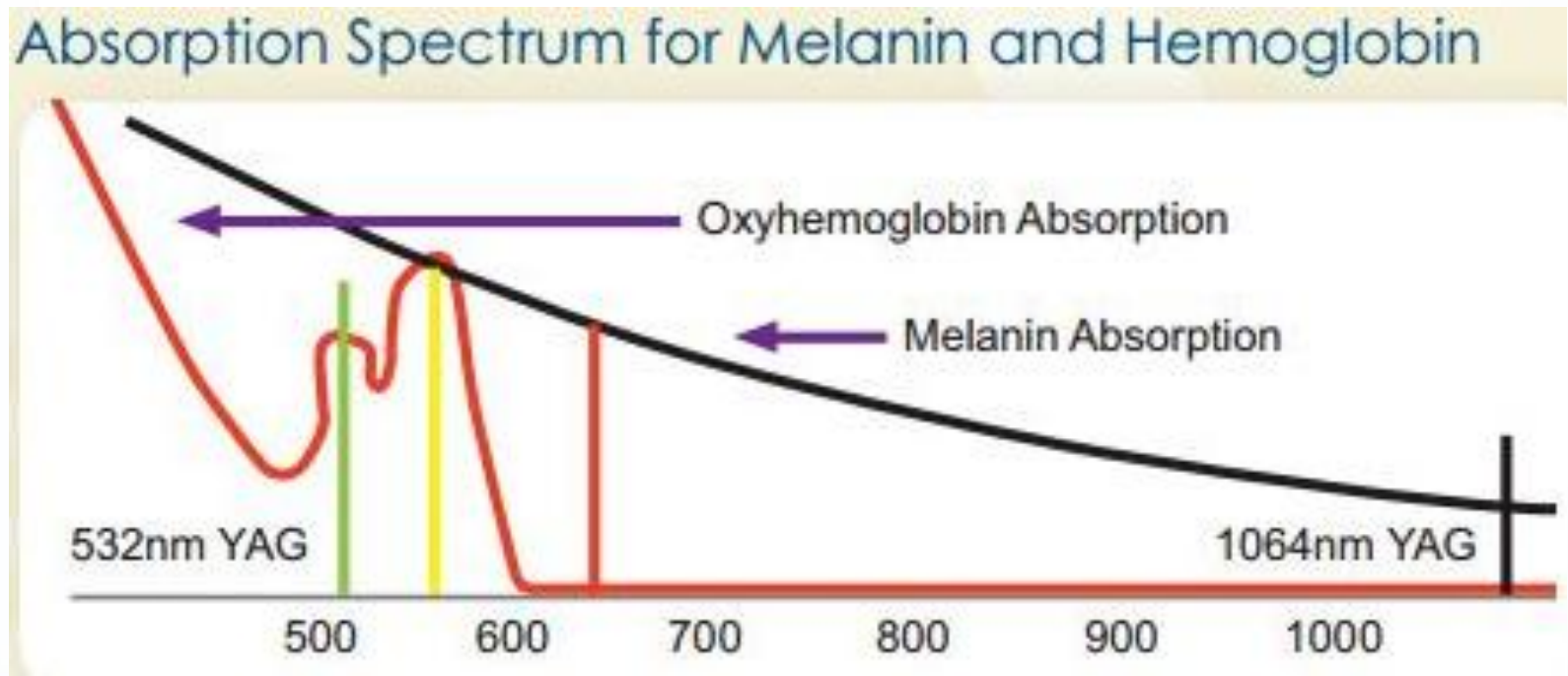


What's Q-Switched Laser?

- Q-switched Nd:yag laser makes the peak power increase, with the characteristics of high strength and low energy. When 1064nm laser passes through a KTP crystal, the frequency-doubled effect is obtained and the 532 nm laser is produced.
- The wavelength of 1064nm can be well absorbed by melanin, which selectively makes small heat-absorbing particles (tattoo ink, melanin, etc.) suddenly heated and damaged. Meanwhile, it does not damage the surrounding tissues and has a good effect on the deep blue and melanin lesions, such as naevus fusconceruleus, nevus of Ota, bad tattoo, tattoo eyebrow. However, the curative effect on epidermal pigmented diseases is poor.



- The wavelength of 532 nm can be strongly absorbed by red and brown pigment, and it has good effect on superficial pigment diseases, such as coffee spot, senile plaque, sunspot, freckle.





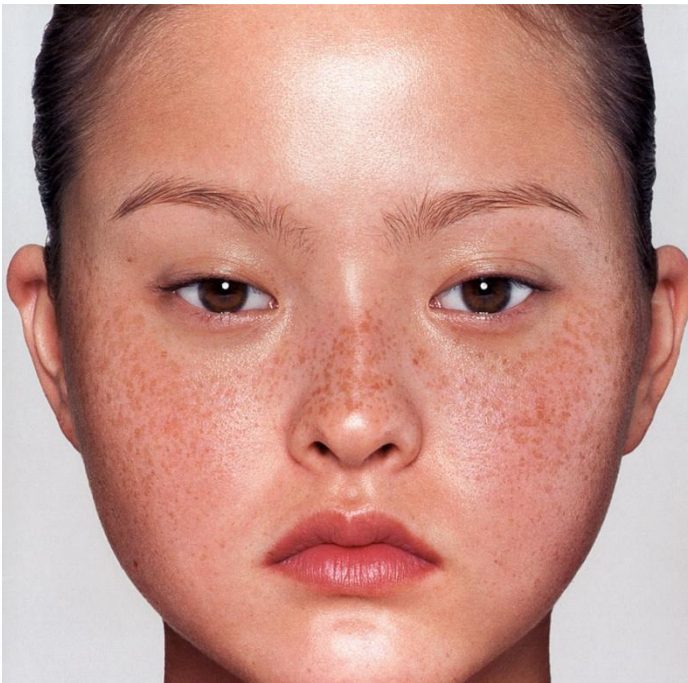
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Pigmentation Dermatoses

Type:

Epidermal hyperpigmentation disease: freckle, coffee spot, nevoid lentigo, junctional naevus, seborrheic keratosis (senile plaque), etc.





- Dermis hyperpigmented diseases: naevus fusconceruleus, blue nevus, nevus of Ota, nevus of Ito, etc. Some pigmented diseases can be found in the epidermis and dermis. Such as nevus spilus, chloasma, Becker nevus and compound nevus.





Tattoo

- A permanent pigment spot produced in the skin by impinging an insot into the dermis.
- In general, it is professional tattoos (the tattooist uses professional equipment to inject the pigment into the dermis of the same depth) and beauty tattoos(tattoo lip, eyebrow, eyeliner is the most common, mostly blue black and red)





- The diameter of the tattoo pigment is about 0.5 -100um. Q-Switched Nd:YAG has higher peak power and nanoseconds-level pulse width, which makes tattoo pigment suddenly heated and instantaneous blasting without injuring surrounded normal tissues. The blasted pigment granules will be excreted from body through circulatory system.
- Q-switched laser is the most effective and least harmful method in the treatment of adverse tattoos at present.



The Introduce of Nd:Yag Machine

- Name: Q-Switched Nd:YAG Laser
- Wavelength: 1064nm, 532nm
- Frequency: 1~5Hz
- Spot size: 2~10mm

Spot size can be adjustable continuously on the hand piece.

- Pulse Width: $5 \pm 1\text{ns}$
- Energy: 1064nm: 0.25~15.92J/cm²
- 532nm: 0.12~6.36J/cm²

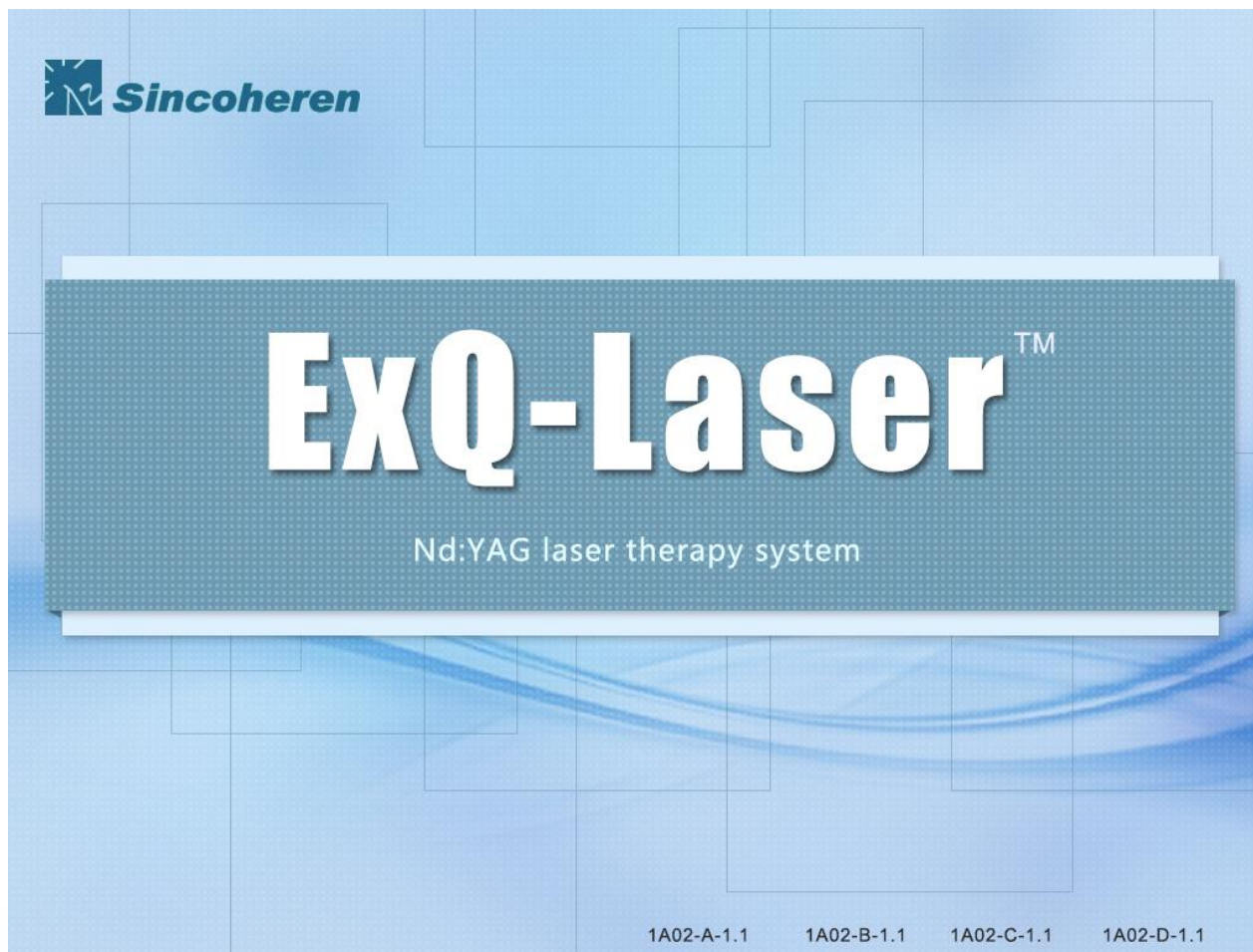




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Operation interface





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ExQ-Laser™

Energy

300 mJ

Fluence 0.77 J/cm²

Spotsize 7 mm

Counter 123

Frequency 1 Hz

WaveLength 1064 nm

Standby

Ready

www.sincoheren.com



Indications

- Indications are different depending on the wavelength:
- The penetration of 1064 nm is deeper, which is mainly used to treat pigmented lesions of the dermis, such as chloasma, naevus fusconceruleus, nevus of ota , etc. At the same time, it is also used to do blue and black tattoo removal. The immediate reaction is local needle-like blood (except chloasma, chloasma can only be scanned with large spot and small energy).
- The penetration of 532nm is shallow, which is mainly used to treat pigmented skin lesions of the epidermis, such as freckle, nevoid lentigo, sunburn, seborrheic keratosis, coffee spot, freckle, nevoid lentigo. It is also used to do red and brown tattoo removal. The immediate reaction is that the skin is just whitish.



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Setting Parameters



Before

After

Freckle Wavelength: 532nm

Frequency: 1--3Hz

Spot size: 3—4mm

Energy:100--180mJ

Fluence: 0.79--1.43J/cm²

1--3 times, every 2 or 3 months for one treatment.



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Before

After

Senile plaque (Sunburn)

Wavelength: 532nm

Frequency: 1--3Hz

Spot size: 3—4mm

Energy: 100--190mJ

Fluence: 0.79--1.51J/cm²

1--3 times, every 2 or 3 months for one treatment.



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Before

After

Coffee spot

Wavelength: 532nm

Frequency: 1--3Hz

Spot size: 3—5mm

Energy: 120--140mJ

Fluence: 0.95—1.98J/cm²

2--4 times, every 2 or 3 months for one treatment.



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Before

After

Chloasma

Wavelength: 1064nm

Frequency: 3--5Hz

Spot size: 6—8mm

Energy: 280--500mJ

Fluence: 0.99--1.48J/cm²

Treatment times according to individual differences

Every 15 or 30 days for one treatment.



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Before

After

Nevus of Ota

Wavelength: 1064nm

Frequency: 1--3Hz

Spot size: 4mm

Energy: 390--490mJ

Fluence: 3.10--3.90J/cm²

3--6 times, every 2 or 3 months for one treatment.



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Before

After

Naevus Fusconceruleus

Wavelength: 1064nm

Frequency: 1--3Hz

Spot size: 3—4mm

Energy: 210--440mJ

Fluence: 2.97--3.50J/cm²

3--6 times, every 1 or 2 months for one treatment.



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Before

After

Tattoo Removal

Wavelength: 1064nm

Frequency: 1--3Hz

Spot size: 3—4mm

Energy: 210--480mJ

Fluence: 2.97--3.82J/cm²

2--5 times, every 2 or 3 months for one treatment.



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Before

After

White Doll

Wavelength: 1064nm

Frequency: 3--5Hz

Spot size: 6—8mm

Energy: 280--500mJ

Fluence: 0.99--1.48J/cm²

5 times, every 15 or 30 days for one treatment.



Notes:

- In the use of the machine, doctors should flexibly adjust parameters according to the actual situation: individual differences (such as patient tolerance) treatment response, etc. Before using it, Skin tests should be performed to avoid accident.
- For several treatments, the treatment should start with low energy, and increase it step by step. The doctor adjust the parameters in time according to the patient's response.



Method of Operation

- Skin must be thoroughly cleaned before operation. On the one hand is to avoid residual cosmetics blasting during the treatment, on the other hand is that some areas require 3 to 7 days to stay free of water after treatment.
- Alcohol or iodophor cotton ball, saline, sterile gauze, and disposable ice bag should be prepared before operation. The application of anesthetic usually takes 30 min-50 mins. Removing the anesthetic and wiping skin with saline cotton ball before treatment.
- The patient needs a lying position. Using saline gauze to cover eyes or wearing eye masks directly to avoid damage to eyes caused by laser misfire.



- Turn on the machine. Firstly, select the wavelength according to the disease to be treated. Then adjust the spot size on the handpiece, and set the parameters of energy, frequency. Finally, start treatment.
- The light is completely controlled by the foot switch, so the operator should be careful when pressing Ready. He should master the rhythm of the treatment so as not to damage normal tissue by the laser.
- Operators also should protect themselves, especially using Q532 nm green light, he must use protective goggles. In the treatment, the hands should be perpendicular to the healing skin area. Try to use low frequency (except for full face treatment). Try not to overlap treatment to prevent energy accumulation.



Postoperative Considerations

- It is very important to do local cold compress after operation. Pay attention to the aseptic gauze in the place where the ice bag touches the operation area. Cold compress for more than 30 minutes will reduce the occurrence of blisters after operation.
- Using antibiotic ointment (generally erythromycin eye ointment) in the operative area to prevent infection. If scab forms, the patient must pay attention to avoid touching water and keeping it dry. The scab should be natural exfoliation, and not be forcibly removed.



- It is very important to pay attention to sun protection after treatment. Good therapeutic effect is the combination of reasonable treatment parameters and postoperative maintenance.
- One week after the operation, the scab should naturally fall off. At this time the patient can use physical sun protection, such as using sun umbrella. Do not use erosive products, such as keratolytics or efficacy products one month after treatment.
- After the scab falls off, the patient should apply the sunscreen with SPF30+ when he goes out.



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Thank you!