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## CHAPTER 2

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### LITERATURE REVIEW

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#### 2.1 Previous Related Studies

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**-0.5 inch-** → Stratigos et al. (2000) considered treatment of cutaneous pigmentation as one of the most interesting areas of cutaneous laser surgery. They reviewed the 4 main short-pulsed, pigment-selective lasers in clinical use at that time, and Q-switched ruby laser (694 nm, 25-40 nanoseconds) was one of them which used successfully for decades in treatment of superficial pigmented lesions, such as ephelides, solar and labial lentigines, and flat seborrheic keratoses. Dermal and mixed epidermal/dermal pigmented lesions like melasma show variable responses.

##### **-0.5 inch-** → 2.1.1 Indications for Facial Resurfacing

Laser facial resurfacing treat extensive cutaneous changes duo to solar damage, and other skin lesions including (Goodman, 2007; Kilmer & Semchyshyn, 2005)

**-0.75 inch-** → 2.2.2.1 Irregular pigmentation and Dyschromia: Many epidermal pigmented lesions that are due to photoaging, such as ephelides, lentigines, seborrheic keratoses, dermatosis papulosa.

2.2.2.2 Vascular lesions: Like telangiectasia, angiomas with venous lakes, standing erythema, and flushing disorders.

##### 2.1.2 Contraindications to Nonablative Technologies

Because of the possible varied side effects and complications after cutaneous laser surgery, it is essential that each patient receive consultation before treatment to assess the risk factors of adverse sequelae and contraindications (Tanzi & Alster, 2008; Goodman, 2007; Kilmer & Semchyshyn, 2005) which include:

2.2.3.1 Concurrent isotretinoin remains a controversial issue.

2.2.3.2 Current or recent tan or intention to expose to high-dosage ultraviolet radiation. This is of much greater concern in patients who seek visible laser or light source treatment.

**-1 inch-** → 1. Pregnant or breast feeding women.



This is a prospective randomized controlled bilateral left-right comparison trial. It was performed in accordance with Good Clinical Practice. The treatment protocol has been reviewed with each patient who then signed the informed consent. The research was accomplished at Mae Fah Luang University Hospital, Bangkok (Outpatient department).

According to the Clinical Assessment of Repigmentation degree, the mean results of the three dermatologists assessment showed 14 patches (82%) out of the 17 patches were given score 1 which means 1%-24% repigmentation, while only 3 patches (18%) were given 0 score, 6 his means that carbon dioxide laser has achieved mild repigmentation effect in vitiligo patches.

One patient noticed repigmentation in areas not treated by laser, she claimed that repigmentation started to occur in her neck and chest during period of the study, this encouraging news need to be verified in the light of any immunological effects of carbon dioxide laser or it is just an accidental event or something else. But we know that Vitiligo is known as a slowly responding disease so three months of laser sessions may be not enough to achieve complete clinical improvement in repigmentation.

**Table 2.2** The Features of the CICU RF Laser Device

<b>Item</b>	<b>Feature</b>
Laser type	RF CO2 ALL METAL SEALED TYPE
Laser power	up to 30 watt
Laser mode	TEM <sub>00</sub> (10.6 μm)
Pulse duration	100-5000 μs
Repetition	0.2-1 s/single
Overlap	1-10 TH
Distance	0.1-2 mm
Treatment area	1*1 - 20*20 mm
Text	Text
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**Table 2.2** (continued)

Item	Feature
Pixel quantity	up to 40,401
Pixel size	> 100 micron
Cooling	Air Cooling
Optical guide	Articulated arm

**Note** Pt. for (patient), CAR for (Clinical Assessment of the Repigmentation)

**Source** Manstein et al. (2010)



**Figure 2.1** CICU RF CO2 Laser Device

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After this relatively short period of follow up, the results, in conclusion, showed patient satisfaction score 16.7% (1 patient) were really satisfied, 66.7% (4 patients) were slightly satisfied and 16.7% (1 patient) with poor satisfaction.