



Use Diode Laser to Estimate Foot Diabetes Disease

K. Hana Hasan^{1*}, Ahmed Jumaah Mhawes²

Abstract

Diode laser wavelength (785nm) was used of treatment foot diabetes to different type. There laser is better than by using Er: YAG or IPL. By using process the skin later are absorbed laser beam especially in superficial treatment these laser. Therefore, there are many different characteristic, which related to the skin layer, such as the stimulated of the skin and such as the thermal relaxation time (TRT) and the target (TRT) time which is required for the heated tissue that used to lose about half of its heat.

Key Words: Use of Diode Laser to Treatment Foot Diabetes.

DOI Number: 10.14704/nq.2020.18.4.NQ20157

NeuroQuantology 2020; 18(4):27-30

Introduction

One of the more familiar disease around the world is the diabetes mellitus. The spread of it around the world can be consider as more than people. Therefore, the number of people who suffer from this illness is rising in every country [1,2]. Moreover, there is a considerable financial effect on the national health system as well as on the patients quality of life ; because of the diabetic foot problems. Thus, the using of low level laser therapy (LLL) including the light of low level that used in front of the light emitting diodes. This change establish the reduction [3, 4]. The laser parameters depend:-

1. Wavelength:- It preferable to select longer wavelength whenever possible. This is important for patients with darker skin. If short wavelength laser are used melanin may absorb. The laser energy intended for hemoglobin and result in depigmentation. Longer wavelength short may be suited for superficial tattoo removal.
2. Pulse duration:- The pulse duration is

determined by the thermal relaxation time (TRT) of the target.

3. Fluencies:- energy per unite area.
4. Size spot:- larger spot size tend to have less scattering of the laser beam and deep dermal penetration.
5. Frequency:- Number of the waves per time (HZ).
6. Power density:- Number of photo energy of absorption by special cross section area of treatment tattoo under treatment time.

27

The Injure Recovery Process in the Diabetes Mellitus

The most important problem with diabetic wounds is their way of taking treatment; because they don't follow the ordinary process of their recovery for their wounds. This dynamic operation consists of four phase: The proliferate, inflame action, hemostasis and remodeling.

Corresponding author: K. Hana Hasan

Address: ¹Sumer University, College of Basic Education, Iraq; ²University of Kufa, College of Medicine, Iraq.

¹E-mail: sumer56gameen@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 10 March 2020 **Accepted:** 06 April 2020



1. The Proliferation and Migration

Several process start at the position of the lesion, when the inflammation decrease. Thus, there take place in order to restore the oxygen supply, and ECM the form of the proteins which includes collagens.

2. The Hemostasis

It is one of the cell impairs phase, this process includes the activation of the platelet, aggmation and the adhesion to the damaged end of heling to keep the hemostasis. This phenomenon known as congelation [5].

3. The Inflammation

This process occurs when there is an injury in the tissue; because of the macrophage, neutrophils and mast cell which is responsible for the producing of the inflammatory cytokines, as well as the releasing of the pattern, and show diminution in their functions which contributes to the susceptibility to

would contagion.

4. Maturation (remodeling)

During maturation, the different tissue gradually achieves strength and flexibility. Here, collagen fibers observe, the tissue matures and there is a comprehensive expansion in inflexibility. The remodeling phase varies extremely among wounds.

Selective Photo - therolysis

It is a term which first introduced by Anderson, and parish. This term is clearly refers to the objective of the elective distraction of the structure of tissue, which occurs by the interaction of the temperature, that induced by the light as source of it parameters can be found, and we can take them into account in order to achieve the selection photo thermolysis.

1. Wave length:- It refers to the location of the depth of the permeation, during the dermis and the epidermis figure (1).

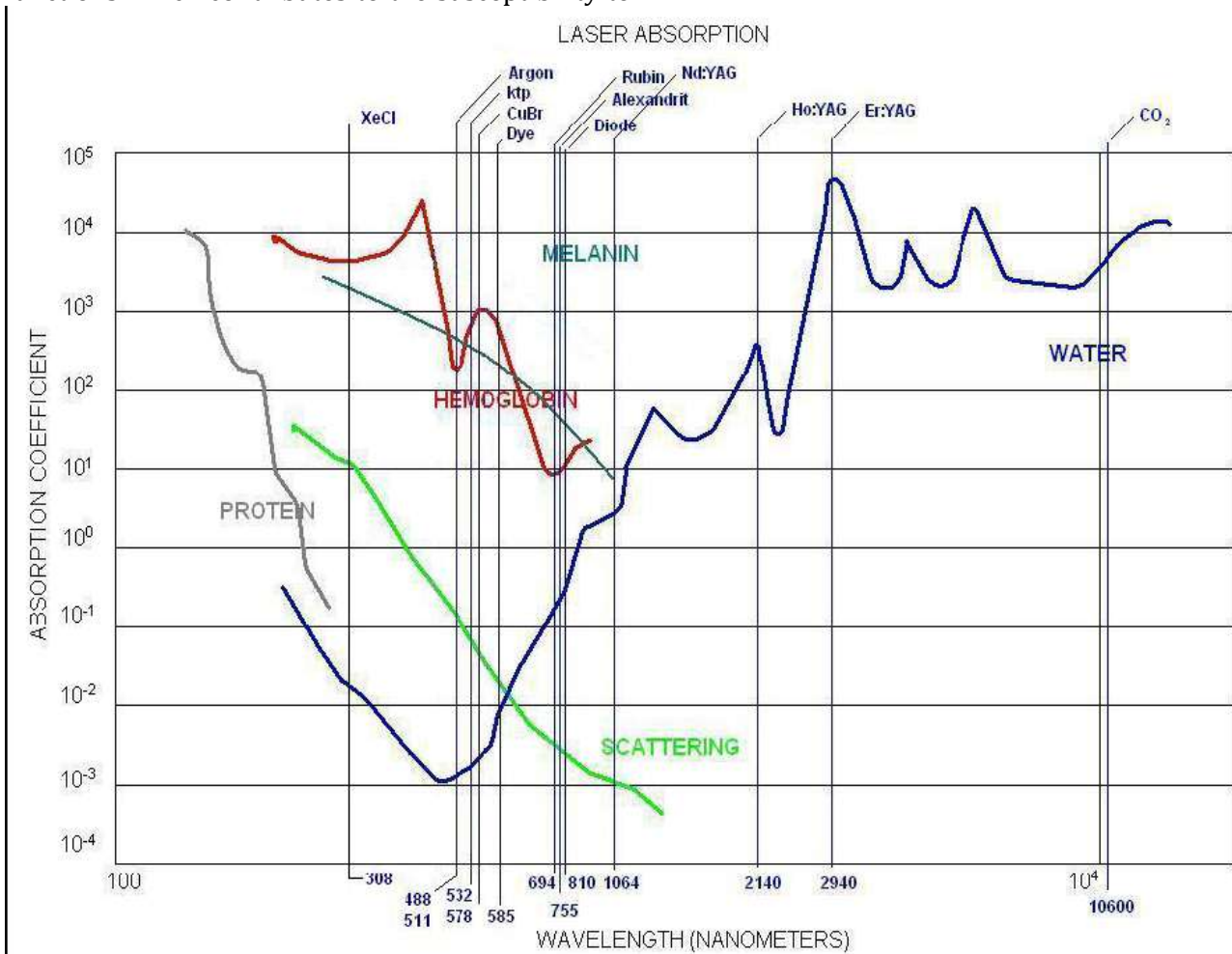


Figure 1. Wave length and absorption coefficient



2. Pulse duration:- It is the determines by using the thermal Relaxation time (TRT).
3. Spot size:- refers to the scattering of the

minimal laser beam, and the deep dermal figure (2).

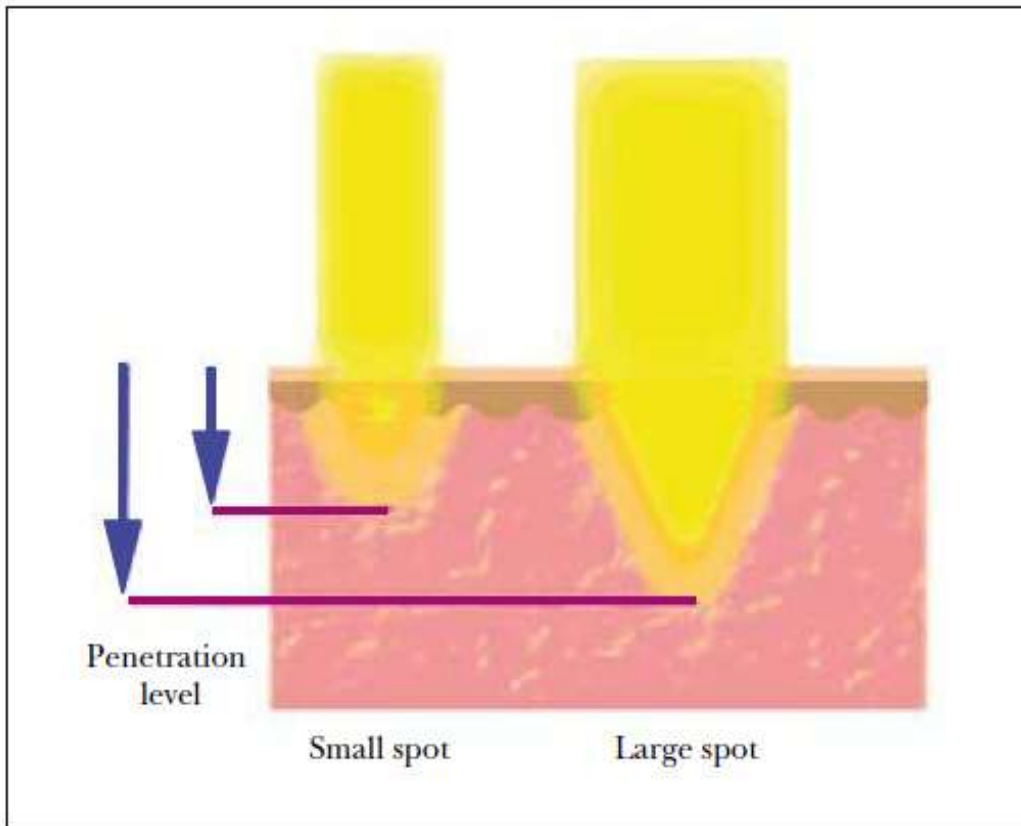


Figure 2. Relation between penetration level and size spot

4. Cooling system:- The cooling include air cooling or cool gels applied to the surface.

Classification Laser Diode

1. **Side effect:-** Sugar foot syndrome is yield of the multifactorial take place due to many effect like peripheral conductive neulaplese [more and scenes nerve] and the effect of foot ulcers [6].
2. **Suger foot ulcers:-** The kind of this case depend on the main of effect due the size and depth in the foot. Some is deeper or more extensive or contain complex case. Metabolic information in grades give ulcer grade kind of classification [7, 8].
3. **Normal therapy method:-**Treatment operation include, the kinds of clean the wind, expend the vessel of blood, surgical operation to bullet the skin more smooth and remove all fright dead cell from the skin of foot[6].
4. **Laser treatment:-** (LLLTT), called fine laser treatment in this teaching, under the kind of

treatment in this teaching, under the kind of treatment is bio stimulated. The interaction among photons of laser because and among foot cells to this every one absorbed by the molecule to stimulated these cells without produce these cells without produce change in the surrounding tissue [9].

Conclusion

As the most recent drugs have not proven to be defective, there is urgent medical need in finding an approved medicine to enhance healing of diabetic foot ulcers. Interaction of laser light with skin laser is electromagnetic beam with wavelength (785nm).The incident ray are interact with surface skin and some part are reflected another part are penetration inside the layer of skin. The change reflection index between air and surface of the skin. There are special complex used as a good absorption laser. The patient take (8st) cessation the result decreased depth of the penetration of the foot diabetes. Require four to six treatment.



References

- International Diabetes federation, diabetes atlas, internal on al diabetes federation, Brussels, Belgium, 4th edition, 2009.
- Home P, Mant J, Diaz J, Turner C. Management of type 2 diabetes :summary of updated NICE guidance. *BMJ* 2008; 336 (7656): 1306-1308.
- Kerr M. Foot Care for people with Diabetes : The Economic case foe change, NHS Diabetes 2012.
- De Alencar Fonseca Santos J, Campelo MBD, De Oliveira RA, Nicolau RA, Rezende VEA, Arisawa EÂL. Effects of Low-Power Light Therapy on the Tissue Repair Process of Chronic Wounds in Diabetic Feet. *Photomedicine and laser surgery* 2018; 36(6): 298-304.
- Pradhan L, Nabzdyk C, Andersen ND, Logerfo FW, Veves A. Connection in diabetic wound healing. *Expert rev.mol.med.*2009.
- Ruttermann M, Maier – Hasselmann A, Grebe BN, Burckhardt M. Klinische Leitlinie Lokalthherapiechronischer Wunden. Beipatientenmitperiphererarteriellerverschlusskrankheit, chronisch-venoserinsuffizienz und diabetes mellitus. *Deutschesarzteblatt* 2013; 110(3): 25-31.
- Lipsky BA, Berendt AR, Cornia P. Infectious diseases society of America practice guideline fort he diagnosis and treatment of diabetic foot infections. *Clinical infectious disease* 2012; 54: 132-173.
- Armstrong DG, Lavery LA, Harkless LB. Validation of a diabetic wound classification system :the contribution of depth, infection, and ischemia to risk of amputation. *Diabetes care* 1998; 21(5): 855-859.
- Karu T. Photobiology of low – power laser effects. *Health physics* 1989; 56(5): 691-704.

