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PLASMA ACTH AND β-ENDORPHIN LEVELS IN RESPONSE TO LOW LEVEL LASER THERAPY (LLLT) FOR MYOFASCIAL TRIGGER POINTS

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The mechanism by which laser phototherapy (Low Level Laser Therapy-LLLT) induces analgesia in the treatmet of chronic pain is not understood. To investigate a possible role for opioids in this treatment, a double-blind placebo-controlled study was designed to compare the effect of two dosages (1 j/cm and 5 j/cm) of an infrared (IR) lase r (820 nm), a visible red laser (670 nm) and A near-mo nochromatic light emitting dcvice (660 nm. 30 nm bandwidth) on Trigger points. Fifty-six consenting subjects with chronic pain conditions exhibiting myofascial trigger points in the neck and upper trunk region underwent six experimental sessions over a two week period. Blood samples were withdrawn before and after treatment on three of six appointments. Plasma was assayed for β-endorphin (radioimmunoassay, RIA) and adrenoeorti cotropic hormone (ACTH two site immunoradiometric assay, IRMA) to assess opioid response. ACTH was shown to have a cumulative response to treatment with 1 J/cm infrared laser ($p < 0.001$) and 5 J/cm red laser ($p < 0.05$) responding significantly. β-endorphin was noted to be significantly elevated between days one and four ($p < 0,05$) in subjects who received IR(5 j/cm) laser. Results indicated that the analgesic response to phototherapy may be mediated through hormonal/opioid mechanisms, and that responses to LLLT are dose and wavelength dependent A mechanism by which peripheral stimulation using LLLT may clicit activity in the central pathways is proposed. Collapse

Figures and Tables from this paper

Dose type	Monochro-matic red light 660 nm (9.5 mW)	Red Laser 670 nm (10 mW)	IR Laser 820 nm (25 mW)	Placebo
Low Dose (1 J/cm2)	Group 1a n=8	Group 2a n=8	Group 3a n=8	Group 4a n=5
High Dose (5 J/cm2)	Group 1b n=7	Group 2b n=7	Group 3b n=8	Group 4b n=5

Table 1

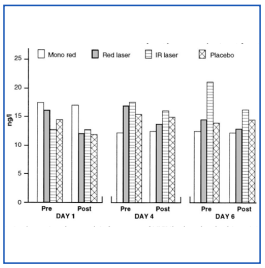

Figure 1

	WEEK 1			WEEK 2		
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
VP		RX	RX	VP	RX	VP
30 min wait				RX		RX
VP				VP		VP

VP = Venipuncture ; RX = Treatment

Table 2

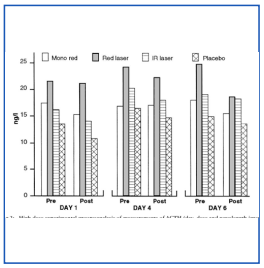

Figure 2

λ/Dose Grouping	β-Endorphin
Overall ACTH	0.7†
Near monochromatic red light ACTH	0.34‡
Red laser ACTH	0.69†
Infrared laser ACTH	0.7†
Placebo ACTH	0.85†
High dose treatment ACTH	0.69†
Low dose treatment ACTH	0.7†

†, $p<0.0001$; ‡, $p<0.01$

Table 3