

# 9<sup>th</sup> Indo Global Summit on **Cancer Therapy**

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## **Photo modulation effect of low level laser therapy against radiation induced oral mucositis in head and neck cancer patients-A randomized clinical trial**

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**Background & Objectives:** Radiotherapy (RT) is treatment of choice for Head and Neck Cancer (HNC) patients. Oral mucositis (OM) during radiation affects patient's overall health. Therefore, the objective of the study is to find the photo modulation effect of Low Level Laser Therapy (LLLT) against radiation induced oral mucositis in head and neck cancer patients.

**Material & Methods:** This double blinded study randomized 56 HNC patients scheduled for RT [Dosage=66 Gray (2Gy/fraction), 5 fractions/week, total 33 fractions for 6.5 weeks], into Laser (28) and Placebo (28) groups. Laser group patients received LLLT [Helium-Neon,  $\lambda=632.8\text{nm}$ , Power-density=0.024W, Dosage=3.0J/point, total dosage/session=36-40], spot-size=1cm<sup>2</sup>, 15-20min/session, 5 sessions/week), whereas placebo group did not receive laser. OM grades (RTOG/EORTC scale), oral pain, weight loss, need for morphine analgesics and tube feeding and RT break were recorded by a blinded assessor. Descriptive statistics and tests of repeated measures were used for analysis keeping  $p<0.05$ .

**Results:** Significant reduction in the incidence and duration of severe OM ( $p=0.001$ ) and severe pain ( $p=0.020$ ) and weight loss ( $p=0.005$ ) was observed in laser than placebo group.

**Conclusions:** LLLT decreased the severity of OM and oral pain in HNC patients. In addition we observed lesser weight loss, morphine analgesic use and radiation break happened in laser group.

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## **Phytoimmunotherapy: A new approach for cancer treatment**

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Cancer is the most deadly disease of today which figures among the leading causes of death worldwide, accounting for 8.2 million deaths in 2012 and it is expected that annual cases will rise from 14 million in 2012 to 22 million within next two decades. Cancer is usually treated with chemotherapy, radiotherapy and surgery which have many side effects. Recent advances prove the role of immune response of body in cancer prevention and treatment. Immune response of body can be modulated by environmental factors, food, stress etc. Since ages, the medicinal plants in the form of extracts or their phytochemicals have been employed as therapeutic agents. In our lab, since past 27 years the work is going on to find out the impact of plant extracts and their phytochemicals on modulation of immune response which in turn is applied to cure or combat various diseases with emphasis on cancer therapy. In recent studies, extracts of four plants i.e., *Ziziphus mauritiana*, *Woodfordia fruticosa* and *Prunus cerasus* were tested for immunomodulatory and anti-cancerous activity. Methanolic fruit extract of *Prunus cerasus* (PcMFE) was found to be the best immunomodulators; hence, it was further evaluated for its anti-cancerous activity. In addition, PcMFE was subjected to chromatography for phytochemical isolation. Four major compounds i.e., Chlorogenic acid, Rutin, Quercetin, Diadzein were isolated and tested for their anti-cancerous activity against different cell lines *in vitro* and later *in vivo* studies were carried out with best selected compound. EAC ascites reduction and solid tumor growth inhibition were the parameters employed. The extract inhibited the tumor growth to a tune of 52% and a quercetin was found to be the best tumor inhibitor up to 89%. 5 FU was used as a control. It was concluded that *P. cerasus* or its compounds can be employed as an alternative and safe anti-cancerous therapeutic agent. In addition to *P. cerasus*, methanolic extracts and their compounds, seed extract of *Z. mauritiana* and flower extract of *W. fruticosa* were also found to be anti-cancerous. Experiments are being carried out in the lab to improve the bio-efficacy of these extracts through nano-delivery *in vivo*.

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