**Abstract**

Rose Bengal has been used to assess hepatic function, ocular disorders and as a photosensitizer in photodynamic therapy. In this study, RB was tested in vitro in the absence of light for its effects on melanoma cells and mechanisms of its effects. In addition, a patient was treated by intrallesional injection of RB to metastases with PV-10(RB).

**Methods**

RB induced cell death in melanoma cells but not fibroblasts. Death was predominantly due to necrosis but 2 times also underwent apoptosis that was dependent on activation of caspases. Cell death was not due to release of Reactive oxygen species RB is taken up into lysosomes and it is probable (but not proven) that cell death results from release of Cathepsins.

The patient who had chemotherapy radioresistant RB induced cell death in melanoma cells but not Rose Bengal has been used to assess hepatic function, ocular disorders and as a photosensitizer in photodynamic therapy.

**Conclusion**

Further studies to understand the mechanism of action and its role in clinical management of melanoma are warranted.

---

**Clinical Effects of Intrallesional PV-10 (RB)**

The following photos illustrate complete remission of metastases that occurred after surgery and irradiation.

**After Injection of PV-10**

- RB is taken up by tumor cells and not normal cells.
- RB localizes in Plasma membranes, nuclear membranes, lysosomes and ?

**Mechanism of Action?**

- RB is taken up by tumor cells and not normal cells.
- RB localizes in Plasma membranes, nuclear membranes, lysosomes and ?

**Possible Mechanism**

- Unreated tumors exhibit high levels of granulocytes (basophils, eosinophils and mast cells) in tissue surrounding tumors
- PV-10 treatment results in increased levels of mononuclear tumor-infiltrating lymphocytes
- Release of tumor antigens to local antigen-presenting cells may facilitate presentation of appropriate antigenic targets to T and B-cells
- Collateral destruction of granulocytes surrounding the tumor may precipitate chemokine release and local inflammation, and could serve an adjuvant role in promoting specific anti-tumor response

**Resolution of Contralateral Tumor**

(After Treatment of Primary Tumor)

**SUMMARY**

Rose Bengal (PV-10) is taken up by lysosomes in Melanoma cells but not normal fibroblasts.

It triggers predominantly necrotic cell death perhaps by release of cathepsins. ROS appear not to be involved.

Intralesional injection of a melanoma metastasis resulted in necrotic death of the injected lesion and bystander lesions. The Bystander response may be to induction of immune response?

Further investigation of the role of RB in treatment of melanoma is warranted.