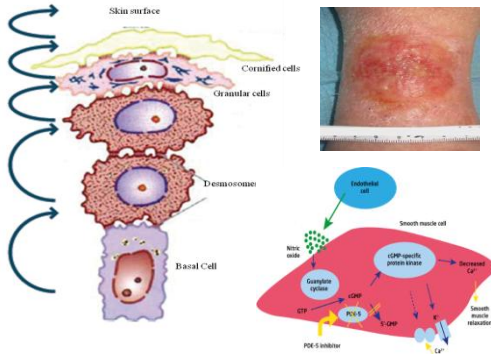


CURATIVE EFFECT OF TOPICAL SILDENAFIL CITRATE HYDROGEL FORMULATION AGAINST RADIATION DERMATITIS: DERMATO-HISTO & SEM STUDY IN RATS

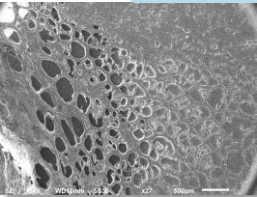
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Division of CBRN Defence, Institute of Nuclear Medicine & Allied Sciences, DRDO, New Delhi, India

INTRODCUTION

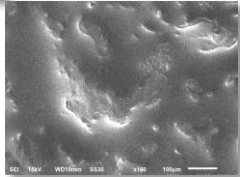


- Radiation dermatitis: common side effect of radiation therapy in cancer.
- Swelling, redness, pigmentation, fibrosis, ulceration

SEM ANALYSIS



- 45Gy single dose localized irradiation
- Lipid oxidation
- Moist desquamation
- High ROS level



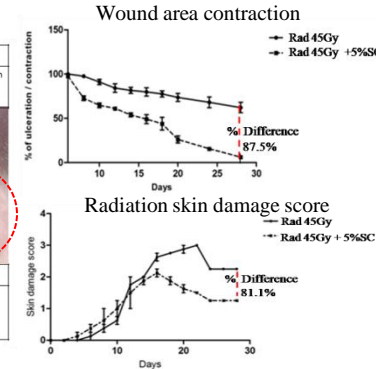
- 45Gy + 5% Sildenafil citrate treatment
- Minimizing irritation
- Improves topography
- Smoothens surface

Topical Changes

Day	0	6	8	10
Damage	No effect	moderate erythema, dry skin	Marked erythema, dry desquamation	Moist breakdown & severe dry desquamation
Day	14	16	24	28
Damage	Moist desquamation & patchy superficial scabbing	confluent moist desquamation with possible slight moist exudates	Papery skin, moderate scabbing and moist desquamation	Open wound full thickness skin loss

RESULTS

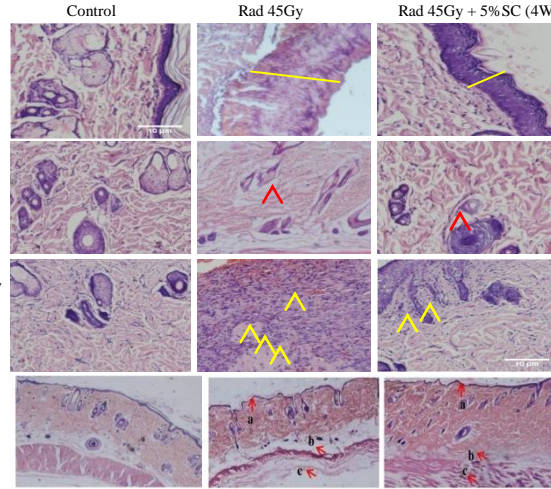
Day	0	6	8	10
Damage	No effect	moderate erythema, dry skin	Marked erythema, dry desquamation	Moist breakdown & moderate scabbing
Day	14	16	24	28
Damage	Moist desquamation & superficial scabbing	moist desquamation in 10% area	Papery skin, large deep scab, remodeling phase	Wound filling, Scar development phase



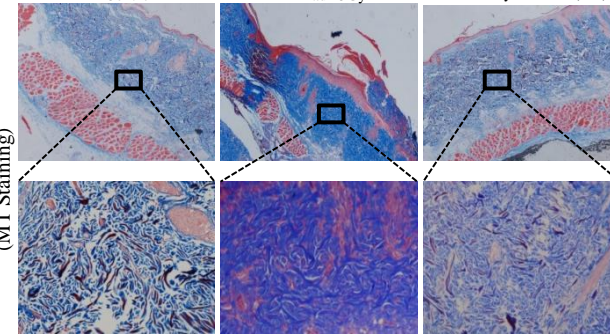
- Improves healing by PDE-5 enzyme inhibition and increasing NO Levels (44.76%).
- Removal of necrotic debris
- Decrease progression and severity of dermal Pathology.
- Hydrophilic dressing Enhance barrier function

Histopathology Changes

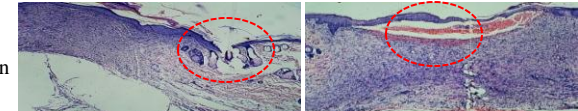
- Epidermal hyperplasia
- Dermal atrophy
- Inflammatory infiltration
- Overall skin damage



Collagen Fibrosis (MT Staining)



Nodule formation



Reformulation of an FDA approved drug put strong curative evidence in pre clinical trails in reducing Radiation dermatitis. Sildenafil citrate hydrogel Improves toxicity scores evaluated according to radiation therapy oncology group criteria.