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Protective efficacy of *Emblica officinalis* Linn. against radiation and lead induced qualitative, quantitative and biochemical alterations in mouse testes

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In today's changing global scenario, ionizing radiation is considered as most potent cause of oxidative stress mediated by free radical flux which induces severe damage at various hierarchical levels in the organization in the living organisms. Testis is a highly proliferative tissue with fast cellular renewal and poor antioxidant defense; therefore, it becomes an easy target for the radiation-induced free radicals that have long been suggested as major cause of male infertility. Radiation causes deleterious effects in all forms of life due to increasing utilization and production of modern technology, a simultaneous exposure of organisms to heavy metals is also unavoidable. These heavy metals become toxic when present in large quantities, with increasing the industrial revolution and industrial waste, the emission of lead has increased into the environment. Thus concomitant exposure to lead acetate and ionizing radiation might produce deleterious effect upon biological system. The total environmental burden of toxicants may have greater effect as against their individual impact as expected by their nature. So interaction between radiation and other toxicants represents a field of great potential importance. In the recent years, immense interest has been developed in the field of chemoprotection against radiation and heavy metals induced changes. In view of the potential for practical application, a variety of compounds are being tested for their radioprotective activities. Among these, *Emblica* holds a great promise. In light of the above, the present study was aimed to evaluate the protective effect of *Emblica officinalis* extract (ECE) against radiation and lead induced qualitative, quantitative and biochemical alterations in the testes of Swiss albino mice. The animals were exposed to 3.0 and 6.0 Gy of gamma rays with or without lead acetate treatment. The *Emblica* was administered seven days prior to irradiation or lead acetate treatment. The animals were divided into seven groups. The nondrug treated control groups were administered lead acetate and exposed to irradiation whereas the experimental groups were given *Emblica* seven days prior to irradiation or lead acetate treatment. Irradiation resulted into significant decrease in the frequency of different spermatogenic cell counts along with severe histo-pathological lesions up to 14th day in control animals and day-14 in experimental animals thereafter, recovery followed towards the normal architecture. ECE pre-treatment effectively prevented radiation induced end of experimentation. Furthermore, ECE administration inhibited radiation and lead induced changes in the testes of mice. These observations signify that the *Emblica officinalis* extract can be used as an efficient radio-protector against radiation mediated qualitative, quantitative and biochemical alterations in testes.

Biography

R K Purohit at present is working as Professor of Zoology in Govt. Dungar College, Bikaner (Rajasthan), India. He has 25 five years of teaching and research experience. He has published around 40 research papers in journals of international repute. He has attended dozens of national and international conferences and also presented his papers. He has also chaired the sessions in many international conferences. He has produced 19 PhDs and 20 MPhil scholars under his able supervision. He has visited Singapore, Malaysia and Japan. He is the recipient of many national and international awards. He has organized one "National Conference on Herbal Radioprotection" in the year 2004 (October, 2004) and an International conference in January 2012. He is the life member of many academic societies. At present, he is holding the prestigious status of National Secretary, Indian Society for Radiation Biology who is specially working in the field of herbal radioprotection.

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