

3 - 103 Protective Effect of GANRA 5[#] on Immunosuppression Induced by Ionizing Radiation in Mice

Liu Tingting, Xu Dan, Pei Hailong, Zhang Yanan, Wu Xin, He Jinpeng
Zhang Xurui, Su Fang, Wang Jufang and Zhou Guangming

Ionizing radiation can produce reactive oxygen species (ROS) which can cause damage to cells. We have synthesized a class of ROS scavengers called GANRA with low toxic but high radio-protective effect to both heavy ions and X-rays. GANRA 5[#] (carboxyl hydroxymethyl) are effective in scavenging free radicals. The pre-administration with the effective dose of GANRA5[#] can reduce the damage to tissues and increase the survival rate of mice.

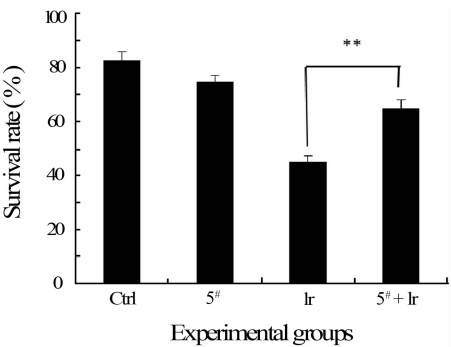


Fig. 1 Effect of GANRA 5[#] treatment on macrophage survival. * $P<0.05$, * * $P<0.01$.

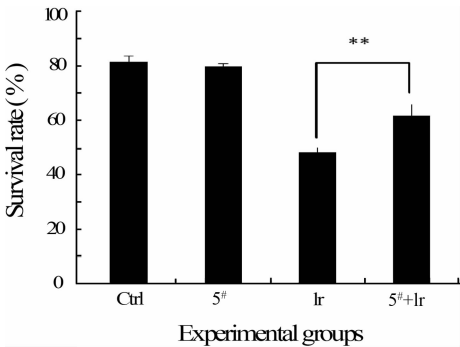


Fig. 2 Effect of GANRA 5[#] treatment on splenocytes survival. * $P<0.05$, * * $P<0.01$.

The effects of GANARA 5[#] on changes in immune system induced by X-ray irradiation in mice were evaluated. The Kun-Ming mice were divided into four groups: Control group (Ctrl); GANRA 5[#] solo-treated group (5[#]); Irradiated group (Ir) and GANRA 5[#] treated at 4 h previous irradiation (5[#] + Ir). The mice were given GANRA 5[#] (100 mg/kg) orally once daily for 6 consecutive days before 8 Gy X-ray irradiation and were sacrificed at 24 h post-irradiation. Pretreatment of GANRA 5[#] enhanced peritoneal macrophage survival ($P<0.01$) and splenocyte survival ($P<0.01$) as compared to irradiated control mice (Figs. 1 and 2). Whole body irradiation also significantly reduced the population of CD4+ ($P<0.05$) and CD8+ T cells ($P<0.01$) at 24 h post-irradiation as compared to unirradiated control. GNARA 5[#] treatment before whole body irradiation countered the decrease in CD4+ and CD8+ T cells populations (Fig. 3).

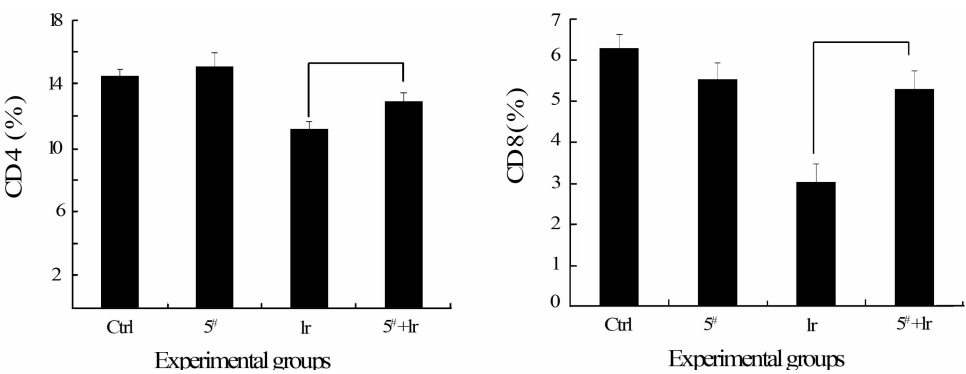


Fig. 3 Effect of GANRA[#] treatment on CD4 or CD8 ratio in mouse T cell populations observed at 24 h interval of whole body irradiation in Kun-Ming mice. * $P<0.05$, * * $P<0.01$.

All the results demonstrate that the immunosuppression induced by X-ray irradiation in mice could be prevented by GANRA 5[#]. GANRA is very potential in the radiation protection.