

References

- [1] M. W. Yang, T. H. Wang, P. P. Yan, et al., *Phytomedicine*, 18(2011)205.
- [2] E. Molina-Jijón, E. Tapia, C. Zazueta, et al., *Free Radic. Biol. Med.*, 51(2011)1543.
- [3] T. Yamamori, H. Yasui, M. Yamazumi, et al., *Free Radic. Biol. Med.*, 53,2(2012)260.

3 - 90 Astragaloside IV Modulates Acute Lung Damage Induced by Carbon Ions In Mice

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Astragaloside IV (ASI), a saponin-like compound, one of the major important secondary metabolites isolated from *Astragalus Membranaceus*, has been shown has many biological properties, such as antioxidant, antiaging, antiviral, inhibiting intracellular calcium overload and reducing the cardiac ischemia reperfusion injury in rat model by scavenging free radical species.

To estimate the potential radioprotective ability of ASI against radiation-induced acute lung damages in mice and provide experimental evidence for cancer radiotherapy in the chest. The Kun-Ming mice were randomly divided into four groups: normal control group (did not receive any treatment, CK), irradiation only group (exposed to carbon ion beams at the dosage of 4.0 Gy, R), ASI-treated group (injected with 50 mg/kg of ASI intraperitoneally for 7 d, ASI) and irradiation + ASI-treated group (exposed to $^{12}\text{C}^{6+}$ beams at 4.0 Gy 1 h after i. p. administration with 50 mg/kg of ASI for 7 d, ASI+R). The histopathological changes of mice lung were examined by HE staining and the expression of transforming growth factor- β (TGF- β) and tumor necrosis TNF- α (TNF- α) in lung tissues was evaluated by enzyme-linked immunosorbent assay (ELISA) at 21 d after irradiation. Furthermore, the lung index and concentration of hydroxyproline (HYP) in lung tissues of mice were measured also. The results showed that compared with irradiated control group, the lung index and concentration of hydroxyproline (HYP) displayed a significant decrease ($P < 0.05$), the expression of TGF- β and TNF- α down-regulated dramatically ($P < 0.05$) in mice lung tissues in ASI-pretreated group. Moreover, the histopathological images indicated that severity of lung injury significantly decreased in combine group also compared to the irradiation only group. All these results suggested that ASI has radioprotective effects against irradiation induced lung injury, its underlying protective mechanisms needs to be further studied.

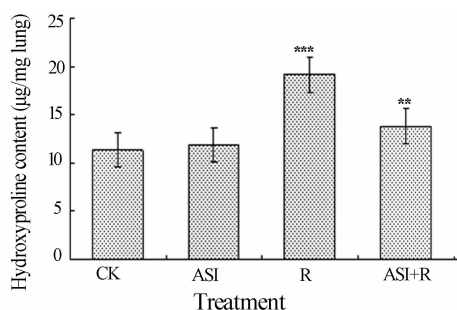


Fig.1 The effects of ASI on the concentration of HYP in mice lung tissues irradiated with $^{12}\text{C}^{6+}$ ions. * * $P < 0.05$ vs R group, * * * $P < 0.01$ vs CK group.

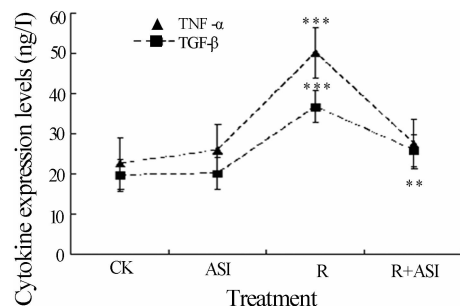


Fig.2 The effects of ASI on the expression levels of cytokine in mice lung tissues irradiated with $^{12}\text{C}^{6+}$ ions. * * $P < 0.05$ vs R group, * * * $P < 0.01$ vs CK group.

References

- [1] H. Lei, B. Wang, W. P. Li, et al., *Acta Pharmacol Sin.*, 24, 3(2004)230.
- [2] S. Yara, K. Kawakami, N. Kudeken, et al., *Clin. Exp. Immunol.*, 124(2001)77.
- [3] K. Kienast, M. Knorst, J. Muller-Quernheim, et al., *Lung*, 174(1996)57.