عنوان مقاله:

Iron chelation effect of curcumin and baicalein on aplastic anemia mouse model with iron overload

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خلاصه مقاله:

Objective(s): The current work aimed to assess whether curcumin and baicalein can chelate iron in aplastic anemia (AA) complicated with iron overload, exploring the potential mechanisms.Materials and Methods: A mouse model of AA with iron overload complication was firstly established. Low and high-dose curcumin or baicalein treatment groups were set up, as well as the deferoxamine positive control, normal and model groups (n=8). Hemogram and bone marrow mononuclear cell detection were performed, and TUNEL and immunohistochemical staining were used to evaluate hematopoiesis and apoptosis in the marrow. ELISA, Western blot, and qRT-PCR were employed to assess serum iron (SI), serum ferritin (SF), bone morphogenetic protein 6 (BMP-6), SMAD family member4 (SMAD4) and transferrin receptor 2 (TfR2) amounts. Results: Both curcumin and baicalein improved white blood cell (increase of 0.28-0.64×109/l in high-dose groups) and hemoglobin (increase of around 10 g/l) amounts significantly, which may related to decreased apoptosis (nearly 30%-50% of that in the model group) in the bone marrow, while their effects on platelet recovery were limited and inferior to that of deferoxamine (DFO). Both test compounds up-regulated hepcidin and its regulators (BMP-6, SMAD, and TfR2) at the protein and mRNA levels; high dosage treatment may be beneficial, being better than DFO administration in lessening iron deposition in the bone marrow.Conclusion: Curcumin and baicalein protect hematopoiesis from immune and iron overload-induced apoptosis, exerting iron chelation effects in vivo.

کلمات کلیدی:

Anemia, Animal, Aplastic, Baicalein, Curcumin, Deferoxamine, Iron overload, Mice, Models