

عنوان مقاله:

Hesperidin as a new Radioprotector

محل انتشار:

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خلاصه مقاله:

Radiotherapy is the most common modality for treating human cancers. Eighty percent of cancer patients need radiotherapy at some time or other, either for curative or palliative purpose. Despite improvements in the development of clinical radiotherapy treatment, planning and treatment delivery technologies, there remains a significant toxicity of radiotherapy to normal tissues and organs. Ionizing radiation causes damage to living tissues through a series of molecular events, depending on the radiation energy. Because human tissues contain 80% water, the major radiation damage is due to the aqueous free radicals, generated by the action of radiation on water. The major free radicals resulting from aqueous radiolysis are OH, H, eaq⁻, HO₂, H₃O⁺, etc. These free radicals react with cellular macromolecules, such as DNA, RNA, proteins, membrane, etc, and cause cell dysfunction and mortality. These reactions take place in tumor as well as normal cells when exposed to radiation. In order to obtain better tumor control with a higher dose, the normal tissues should be protected against radiation injury. Thus, the role of radioprotective compounds is very important in clinical radiotherapy. The ability of some agent to protect against damage caused by ionizing radiation, first released in 1949. Sulfhydryl compounds such as cysteine and Systemin are known as the best radioprotector. However, these compounds have serious side effects such as nausea and vomiting, and dosages needed for radiation protection, have significant toxicity. The search for less-toxic radiation protectors has spurred interest in the development of natural products. The citrus extracts contained high amounts of flavonoids. Flavonoids are a family of polyphenolic compounds found in fruits and vegetables. Flavonoids have wide biological properties including antibacterial, antiviral, anticancer, immunostimulant and antioxidant effects. Hesperidin (HES) is a flavanone glycoside, belonging to the flavonoid family, that found abundant in citrus fruit. The peel and the membranous parts of these fruits have the highest HES concentrations. HES has been reported to exert a wide range of pharmacological effects, which includes antioxidant, anti-inflammatory, anti-allergic, hypolipidemic, vasoprotective and anticarcinogenic actions. HES molecular formula is C₂₈H₃₄O₁₅, and its molecular weight is 610.57 daltons. There is currently a large studies about radical scavenging effect of this agent. Based on these studies the HES can be considered as a radioprotector agent in radiotherapy.

کلمات کلیدی:

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