

Revisión / Review

Radioprotective natural products as alternative complements in oncological radiotherapy

[Productos naturales radioprotectores como complementos alternativos en la radioterapia oncológica]

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Abstract: Humans when exposed to harmful ionising radiations suffer from various pathophysiological disorders including cancer. Radiotherapy is a treatment where these cancerous cells within a tumor are targeted and killed by means of high energy waves. This therapy is very expensive and involves highly sophisticated instruments. In addition to this, most synthetic radioprotectors including Amifostine have been found to possess toxicity. This led researchers to develop a novel, economically viable, and efficient therapeutic alternative to radiation therapy. The last two decades have observed a major shift towards investigating natural products as radioprotectors, as these are immensely effective in terms of their potential bioequivalence relative to many of the established synthetic compounds available. Taking into account the limitations of radiation therapy, an approach 'Integrative Oncology' that involves a combination of both traditional and conventional medical treatment are used nowadays to treat patients suffering from cancer and associated mental and psychological disorders.

Keywords: Cancer; Integrative oncology; Natural products; Radioprotection; DNA damage.

Resumen: Los seres humanos, cuando se exponen a radiaciones ionizantes nocivas, sufren diversos trastornos fisiopatológicos, incluido el cáncer. La radioterapia es un tratamiento en el que estas células cancerosas dentro de un tumor son atacadas y destruidas por medio de ondas de alta energía. Esta terapia es muy cara e implica instrumentos muy sofisticados. Además de esto, se ha descubierto que la mayoría de los radioprotectores sintéticos, incluida la amifostina, poseen toxicidad. Esto llevó a los investigadores a desarrollar una novedosa, económicamente viable y eficiente alternativa terapéutica a la radioterapia. En las dos últimas décadas se ha observado un cambio importante hacia la investigación de productos naturales como radioprotectores, ya que son inmensamente eficaces en términos de su potencial bioequivalencia en relación con muchos de los compuestos sintéticos establecidos disponibles. Teniendo en cuenta las limitaciones de la radioterapia, hoy en día se utiliza un enfoque de "Oncología Integrativa" que implica una combinación de tratamiento médico tradicional y convencional para tratar a pacientes que padecen cáncer y trastornos mentales y psicológicos asociados.

Palabras clave: Cáncer; Oncología integrativa; Productos naturales; Radioprotección; Daño en el ADN.

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