

COMBINATION OF MOLECULAR HYDROGEN (H₂) AND 5-FLUOROURACIL (5-FU) IN CANCER TREATMENT.

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Introduction.

Oxidative stress is clearly recognised as involved in cancer development, as H₂ is clearly recognised as a potent antioxidant and anti-inflammatory and potentially anticancer like activities (anti-apoptotic effect in health or injury cells). There are many factors and variables that contribute to the pathogenesis of cancers such as oxidative stress, DNA damage and mutation, ionizing radiations, carcinogenic chemicals.

Material

H₂ has significant potential to reduce somatic mutation through the reduction of excessive reactive oxygen species (ROS).

Formation of ROS is strongly related to the emergence of several human pathologic conditions such as atherosclerosis, neurodegenerative diseases, and aging as well as certain types of human cancers including lung, breast and colon.

ROS are generated in organisms by γ , X, and UV radiation, bio transformation of dietary chemicals and some diet components.

Somatic mutation is a genetic alteration acquired by a cell that can be passed to another mutated cell in the course of cell division.

Moreover, it has shown through medical studies that H₂ has a protective effect against chemotherapy drugs.

Result

To illustrate that, it is recognized a potential effect of H₂ for improving the quality of life of patients during chemotherapy by efficiently mitigating the side effects of cisplatin. That is well demonstrated that H₂ water consumption might mitigate the side effects of anticancer drugs by decreasing oxidative stress, ameliorating metamorphosis due to decreased apoptosis

(1).

H₂ also exhibits radio-protective action by protecting the immune system (2).

Furthermore, H₂ may alleviate the haematological injury induced by radiation through the suppression of radiation-induced caspase 3 activation, in addition to rescuing the radiation-induced depletion of white blood cells and platelets.

Although anticancer properties of H₂ have been suggested, the mechanism (s) and efficiency by which H₂ act at the cellular level remained to be established.

It has demonstrated recently that H₂ water enhances the cancer cell apoptotic effect of 5-FU.

The major challenge in the production of hydrogen water is preservation of hydrogen ions contained in the dilution.

Conclusion

In this study (3), the obtained data suggest that hydrogen water increased the inhibitory effect of 5-FU on colon 26 cells, and enhance the anticancer activity of 5-FU both in vivo and in vitro and these effects of hydrogen water are related to the hydrogen levels.

Hydrogen water administration improved the survival of mice with colon 26 induced cancer.

Reference

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