

ABSTRACT

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DNA damage response and repair in the development and treatment of brain tumors.

Maleki Dana P(1), Sadoughi F(2), Mirzaei H(3), Asemi Z(4), Yousefi B(5).

Author information:

(1)Research Center for Biochemistry and Nutrition in Metabolic Diseases, Institute for Basic Sciences, Kashan University of Medical Sciences, Kashan, Iran. Electronic address: prs.maleki@yahoo.com.

(2)Research Center for Biochemistry and Nutrition in Metabolic Diseases, Institute for Basic Sciences, Kashan University of Medical Sciences, Kashan, Iran. Electronic address: rahasadoughi@gmail.com.

(3)Research Center for Biochemistry and Nutrition in Metabolic Diseases, Institute for Basic Sciences, Kashan University of Medical Sciences, Kashan, Iran. Electronic address: h.mirzaei2002@gmail.com.

(4)Research Center for Biochemistry and Nutrition in Metabolic Diseases, Institute for Basic Sciences, Kashan University of Medical Sciences, Kashan, Iran. Electronic address: Asemi_r@yahoo.com.

(5)Molecular Medicine Research Center, Tabriz University of Medical Sciences, Tabriz, Iran; Department of Biochemistry, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran. Electronic address: bahmanusefi@gmail.com.

DNA damage response (DDR) comprising DNA repair and cell-cycle checkpoint pathways, is considered as a protective process that maintains the integrity of the genome. However, this mechanism may not be favorable in the context of cancer. Indeed, studies have shown that DDR and repair mechanisms can be involved in the development of different cancers. Furthermore, they may lead to the failure of therapeutic approaches. Thus, studying these mechanisms can be beneficial in a better understanding of cancer development and developing more efficient treatments. Scopus, Google Scholar, and PubMed databases were used for searching articles published on "DNA damage response and DNA repair in the development and treatment of brain tumors". Herein, we review the literature on DNA damage response and DNA repair mechanisms in the development of brain tumors, such as glioma, glioblastoma, and medulloblastoma. Moreover, we summarize the studies that conducted on the role of targeting components of DNA damage response and DNA repair in treating different types of brain cancers, enhancing the currently available therapeutic approaches, and solving the problems in the field of brain cancer therapy.

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