EFFICACY OF CURCUMIN AND CURCUMIN ANALOGUE IN TREATING COLORECTAL CANCER STEM CELLS

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ABSTRACT

Colorectal cancer is one of the commonest cancers in the world and also a common cancer-related death worldwide. Current treatments for colorectal cancer are surgery, radiotherapy and chemotherapy. Despite advanced treatment strategies, the disease rarely gets cured due to its recurrence. The reason is due to the presence of small population of cells called cancer stem cells (CSCs) in the tumor which have self-renewal and differentiation properties. Treatments targeting these cells can somewhat lower the chance of recurrence and metastasis of colorectal cancer. Turmeric is a famous Indian spice containing an active ingredient known as curcumin. Many research and clinical studies have been done on curcumin and found to have anti-cancer properties. Recent studies have shown curcumin and its analogue are also effective in recurrent tumors by targeting those CSC population and inhibiting the cell growth. This structured review was aimed to assess the efficacy of curcumin and curcumin analogue in targeting cancer stem cells in treatment of colorectal cancer. An online search was conducted on PubMed, Science Direct, Medline, and Google Scholar using keywords; colorectal cancer stem cells, curcumin, and curcumin analogue. Out of 8,303 journals from the database, five studies which met the criteria were selected, whereby two of the studies included xenograft tumor transplantation in animal models and the other three studies were done as *in vitro* cell lines studies. The results from the review concluded that the bioactive compound; curcumin and curcumin analogue 1) are effective in targeting colorectal cancer stem cells 2) decrease the tumor growth by reducing cancers stem cell population 3) upon the combination with conventional chemotherapy; it enhances the anti-tumor activity and lessened toxicity of chemotherapy. Overall outcome from this structured review can be deduced as curcumin and curcumin analogues are potent bioactive compounds which show an efficacy in colorectal cancer treatment by targeting cancer stem cells. They are effective in targeting CSCs when applied alone or in combination with conventional chemotherapy.

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