

CAM Therapies 2017: Can curcumin overcome cancer chemo resistance? - Mutlu Demiray - KTO Karatay University, Turkey

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Cancer is a major challenge worldwide, contributing to nearly 9.6 million deaths in 2018. Liver, stomach, colorectal, prostate, and lung cancers are the most common types of cancer among men; while thyroid, cervix, lung, colorectal, and breast cancers are the most common among women. Despite tremendous improvements in treatment modalities have been made in recent decades, millions of cancer-associated deaths continue to escalate as a public health problem

The most widely recognized remedial methodologies for malignancy treatment incorporate immunotherapy and focused on treatment, chemotherapy, radiation, and medical procedure. Of these modalities, chemotherapy stays one of the best techniques. In any case, the viability and utilization of accessible anticancer chemotherapeutic medications regularly neglect to accomplish total disease reduction inferable from the heterogeneity of malignancy cells, show restricted adequacy because of portion constraining poisonousness to the patients, and improvement of multidrug obstruction. Information from cell culture and creature models uncovered that celecoxib, a particular cyclooxygenase-2 (COX-2) inhibitor, may stifle malignancy cells, for example, colorectal disease. By and by, the drawn out utilization of celecoxib may expand the danger of cardiovascular poisonousness. Another chemotherapeutic medication, 5-fluorouracil (5-FU), has been utilized for the treatment of a few malignant growths, including gastric, bosom, liver, and prostate. Strikingly, the investigation found that the anticancer viability of 5-FU was improved when its measurement was expanded. Sadly, the cytotoxicity of 5-FU was likewise expanded in ordinary cells, and hence makes unsatisfactory harmfulness the patients. In this manner, chemotherapy routine that could upgrade clinical results is required for disease patients. So as to beat these issues, a perfect methodology is to join regular chemotherapeutic with normal mixes to give synergistic antitumor viability

Natural products containing secondary metabolites have emerged as convincing candidate compounds for cancer treatment. Curcumin, an active component with yellow phenolic pigment derived from dietary spice turmeric (*Curcuma longa*) rhizome, belongs to the Zingiberaceae plant family indigenous to south-eastern and southern tropical Asia. In addition to its coloring, flavoring, and preservative properties in the diet, turmeric has been widely used for the treatment of many disorders and metabolic ailments such as certain cancer diseases, cough, skin wounds, and inflammation. Curcumin was first isolated almost two centuries ago. Since the time of Ayurveda numerous therapeutic activities has been assigned to turmeric for a wide variety of diseases and conditions including

those of the skin, pulmonary, gastrointestinal system, pains, wounds, liver disorders and cancer. Its anticancer activity, comprising the regulation of proliferation, survival, invasion, angiogenesis, and metastasis, has also been reported for several types of cancer. Especially curcumin potentiates chemotherapeutic agent apoptotic effects. In other words curcumin can overcome cancer chemo and radio resistance.

Curcumin effect; Singh and Aggarwal have shown that curcumin inhibits NF-5B activation pathway at a step before inhibitor kappa B alfa (I5B) phosphorylation. Nuclear Factor-Kappa B (NF-5B) is a key inflammatory transcription factor expressed frequently in tumors. Therewithal NF-kB has an important role of cellular processes such as proliferation, apoptosis, inflammatory and immune response. Recent clinical studies have shown that significant NF-5B expression associated with chemo and radiation resistance and poor outcome in several human cancers. Wu at al. has evaluated NF-5B in the cancer patient outcome.

This meta-analysis has shown that NF-5B overexpression is associated with worse overall survival and disease free survival. Moreover, NF-5B expression was shown to be TNM stage independent poor prognostic factor. Clinical studies that evaluated relationship between NF-5B and prognosis and treatment outcome, were shown that NF-B is associated with poor prognosis and poor response. Also activation of the NF-5B pathway renders many types of tumor cell more resistant to chemotherapy and radiotherapy, presumably via induction of anti-apoptotic proteins which apoptosis induction is a major mechanism of the action of radiotherapy and most chemotherapeutic agents. Inhibition of NF-5B activation seems to be promising option to improve the efficacy of conventional anticancer therapies. Preclinical and clinical observations indicate that NF-5B plays an important role in chemo and radio resistance and establishes the inhibition of NF-5B as a new approach in cancer treatment.

Additionally NF-5B assumes a significant job at the different malignant growth related pathways, particularly MAPK. As a result of these specialities restraint of NF-5B can potentiate tyrosine kinase inhibitors (TKI) adequacy. Preclinical information bolsters these theory and our clinical experience drove us believe that curcumin is a decent accomplice for TKI. Preclinical in-vivo and in-vitro preliminaries assessed curcumin in addition to chemotherapeutic operator and TKIs mix. These preliminaries had indicated that curcumin blend with radiotherapy, chemotherapies or TKIs were better than every treatment alone. Preclinical and early clinical preliminaries and our clinical experience which curcumin blend with

chemotherapy, radiotherapy, TKI experience over 4 years, drove us believe that adds to curcumin standard treatments (radio or chemotherapy or TKI) may cause better result. The best curcumin treatment routine and the best curcumin definitions isn't determinant until today. Therewithal curcumin stacked nanoparticles more viable than free curcumin. We may have powerful and safe accomplice of malignant growth treatment however we need increasingly compelling curcumin definitions. End; Preclinical in-vivo and in-vitro preliminaries, clinical preliminaries information which some of it originated from us, shows that curcumin is significant adjunctive treatment operators are protected and reasonable, as long as we need to utilize chemotherapy, radiotherapy and TKI.