

Chronobiologically modulated chemotherapy in oral cancer

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Chronobiology is the study of the temporal relationships of biologic phenomena. All living things evolved in a milieu characterized by constant change based upon the cyclic relationships of the sun, earth, and moon. The circadian periodicity is genetically retained by all living organisms. Circadian organization is such a basic property of life that derangements may have lethal consequences. Mammalian circadian rhythms result from a complex organization involving molecular clocks within nearly all "normal" cells and a dedicated neuroanatomical system which coordinates the so-called "peripheral oscillators." The core of the central clock system is constituted by the suprachiasmatic nuclei that are located on the floor of the hypothalamus. This circadian organization is responsible for predictable changes in the tolerability and efficacy of anticancer agents. The circadian rhythm dependent chemotherapy provides indirect evidence for time-dependent variability of the response of the human and murine to anticancer drugs. Doxorubicin, cisplatin, 5-fluorouracil and FUDR have been studied in oral cancer for their circadian pharmacodynamics and toxicology. The outcome of these studies clearly concluded that circadian dependent administration of anticancer drugs reduces drug toxicity and allows substantial increase in the maximally tolerated dose which results in better treatment efficacy and greater comfort for oral cancer patients. Thus chronobiologically modulated chemotherapy hold promising results in treatment of oral cancer and other cancer with increased efficacy and decreased toxicity. In coming years the future of cancer treatment lies in circadian rhythm dependent chemotherapy.

Biography:

Dr. Akhilanand Chaurasia, Associate professor and consultant at King George Medical University, Lucknow has dedicated meticulous efforts and supreme services pertaining to oral medicine and oral biology. Dr. Akhilanand chaurasia has an elite academic record. He is graduated from King George's Medical University in 2005 and completed his postgraduation from University of Kerala in 2009. He has diploma in Healthcare biomedical waste management. He has remarkable credit of contributing to academics by publishing 54 manuscripts, peer reviewers of more than 150 international journals, editor in chief of 2 national journals, associate editor of 1 international journal, editor of 10 international journals, editorial board members of 17 international journals, ambassador of European association of cancer research. He is fellow of many prestigious and pristine organizations of dentistry. He is member of 30 international organizations. He is active guide and mentor of postgraduate programmes. Currently he is pursuing PhD in chronobiology of Head and Neck cancer.