A REVIEW OF THE USE OF CURCUMIN
IN CANCER PREVENTION AND
TREATMENT

MELISSA KAMAL
1001128225

MASTER OF SCIENCE (ANTI-AGING,
REGENERATIVE MEDICINE AND MEDICAL
AESTHETIC)

FACULTY OF MEDICINE AND HEALTH SCIENCES
UCSI UNIVERSITY

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ABSTRACT

Throughout the last decade, there has been a significant increase in interest regarding the beneficial effects of phytochemicals and their role in the maintenance of health and prevention of disease. Studies on cell cultures and animals have shown that curcumin has anti-cancer properties, and could be used as a preventive or treatment agent against cancers. Curcumin fits well in the effort of cancer management by edible phytochemicals, as it is considered to be inexpensive, readily applicable, and accessible. This structured review aimed to determine whether curcumin is effective in preventing and treating cancer in humans. Literature search of journals was done via PubMed and Cochrane Library, using the keywords curcumin, turmeric, neoplasms and cancer. All studies on human subjects that assessed curcumin’s effect on cancer from the year 2000 to 2011 and published in the English language were included. Studies in which curcumin was used in combination with other supplements, animal studies and studies which were not published in English language were excluded. Ten studies were included, whereby two studied the effect of curcumin on cancer prevention and eight were studies on curcumin in the treatment of cancer. In these studies, curcumin monotherapy from 440 mg to 12,000 mg daily or curcumin in combination with chemotherapy were used. The studies showed that curcumin used as a single agent was able to reduce precancerous lesions, decrease levels of proinflammatory metabolite (PGE$_2$), decrease oxidative biomarker (M$_1$G), decrease proinflammatory cytokines (TNF-α), increase tumour suppressor protein (p53) and induce stable disease in patients with colorectal cancer. When used in conjunction with chemotherapy, curcumin induced partial response and stable disease in patients with pancreatic cancer and breast cancer. Thus, curcumin has great potential in preventing and treating cancer in humans. Curcumin can modulate the growth of tumour cells through regulation of multiple cell signaling pathways, thereby having chemopreventive as well as chemotherapeutic activity. There is enough reason to consider progression of curcumin into evaluation as a cancer treatment and chemopreventive agent, as shown by the findings presented here. Thus, it is hoped that curcumin may one day be included in the arsenal of chemopreventive and chemotherapeutic drugs.