

## Telaah sistematis peran vitamin d dalam mencegah karsinogenesis kolorektal = The role of vitamin d in preventing colorectal carcinogenesis: a systematic review

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### Abstrak

Karsinoma kolorektal merupakan salah satu kanker dengan beban penyakit yang tinggi di dunia. Berbagai penelitian mengenai efek anti-tumor vitamin D telah dilakukan sejak hubungannya dengan kanker kolorektal terungkap. Studi ini bertujuan untuk mencari secara sistematis penelitian mengenai efek anti-tumor vitamin D pada kanker kolorektal untuk memahami mekanisme molekuler di balik aktivitasnya. Sebuah tinjauan sistematis dilakukan dengan mencari di database elektronik PubMed untuk penelitian asli yang mempelajari efek pemberian vitamin D pada kanker kolorektal. Studi yang menyelidiki mekanisme di balik efek tersebut memenuhi syarat untuk evaluasi. Dua puluh tujuh studi dimasukkan untuk analisis dengan rentang tanggal publikasi dari 1987 hingga 2017. Studi in vitro dan in vivo mengungkapkan bahwa pemberian vitamin D mampu menekan proliferasi, menginduksi apoptosis, mempertahankan diferensiasi sel, mengurangi respons proinflamasi, menghambat angiogenesis, dan menghambat perkembangan metastasis. Penambahan kalsium ke suplementasi vitamin D juga ditemukan meningkatkan aktivitas anti-tumor vitamin D melalui cross-talk antara jalur pensinyalan mereka. Vitamin D dapat menghambat pertumbuhan dan perkembangan kanker kolorektal melalui jalur genomik (mengatur transkripsi gen pro- dan anti-tumor) atau non-genomik (mencegah aktivasi jalur pensinyalan pro-tumor secara langsung).

.....Colorectal carcinoma is one of the cancers with a high disease burden globally. Since its relationship with colorectal cancer has been revealed, various studies on the antitumor effect of vitamin D have been conducted. This study aims to systematically search for research on the anti-tumor effect of vitamin D on colorectal cancer to understand the molecular mechanism behind its activity. A systematic review was carried out by searching the PubMed electronic database for original research studying the effects of vitamin D administration on colorectal cancer. Studies investigating the mechanism behind these effects are eligible for evaluation. Twenty-seven studies were included for analysis with publication date ranges from 1987 to 2017. In vitro and in vivo studies revealed that administration of vitamin D could suppress proliferation, induce apoptosis, maintain cell differentiation, reduce pro-inflammatory responses, inhibit angiogenesis, and inhibit the development of metastases. The addition of calcium to vitamin D supplementation was also found to increase vitamin D anti-tumor activity through cross-talk between their signaling pathways. Vitamin D can inhibit the growth and development of colorectal cancer through genomic pathways (regulating transcription of pro- and anti-tumoral genes) or non-genomic (directly prevents activation of pro-tumor signaling pathways).