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Antitumor activity of normal and chitosan nanoparticles loaded with different extracted vitamin B types

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Fresh fruits are considered as a healthy source of water soluble vitamins. Vitamins are needed for metabolic reactions, their deficiency or increased intake lead to different irregularities in normal metabolism. Our work aimed to determine some different types of vitamin B as B1, B6, B2, B9 and B17 and applications of different methods of extracting and analyzing them by HPLC then loading them on chitosan nanoparticles (CSNPs) to study its biological applications and cytotoxicity on different cell lines. HPLC analysis of acid hydrolysis samples showed that thiamine (B1) was found in range of 88.13-96.66 %, riboflavin (B2) was 95 - 96.216 %, pyridoxine (B6) was 95.22 - 100 %, folate (B9) 95.6 - 96.94 % while amygdalin (B17) was 94.975-96.66 %. After loading vitamins with chitosan, the results showed cytotoxic activities of Vitamins B1, B2, B6, B9 and B17 as these extracted vitamins were tested against different cancerous and normal cell lines. Vitamin B6 nanoparticles showed the best cytotoxic effect on different cancerous cell lines as Hepatocellular carcinoma (HePG2), Mammary gland Breast cancer (MCF-7) and Epitheliod Carcinoma Cervix cancer (Hela) and it can be considered as a safe compound on normal cell as normal human lung fibroblast cell line (WI-38).

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