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The decoration of selenium nanoparticle with *Dictyophora Indusiata* polysaccharide and its anticancer Activity

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Selenium nanoparticles (SeNPs) have been proved to have biological activities along with low toxicity, but are quite unstable and poorly taken up by cells. In this paper, a new polysaccharide (DP1), purified from *Dictyophora indusiata*, was used to functionalize SeNPs to form high stable nanocomposites DP1-SeNPs with an average diameter of 89.14 nm. DP1-SeNPs showed notable antiproliferative effect on human cancer cell lines (HepG2, MCF-7, SGC-7901, A549, Hela and PC3). The antiproliferative effect of DP1-SeNPs was associated with nuclear condensation, DNA cleavage, S phase cell arrest. With the treatment of DP1-SeNPs, caspase-3, 8, 9 were triggered in a dose-dependent manner in HepG2 cells. Also, the expression level of FADD was increased dramatically, implying that DP1-SeNPs induced apoptotic pathways were mainly through the activation of FADD and caspase-3, 8, 9. Furthermore, ROS over generation and mitochondrial dysfunction were also involved in DP1-SeNPs-induced apoptosis. Therefore, the underlying antiproliferative activity mechanism of DP1-SeNPs was both via death receptor-mediated and mitochondria-mediated apoptotic pathways. This work could eventually lead to development of anti-cancer nutraceutical supplements using natural materials of food origin.

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What should I eat next? Development of a theoretical model of how college-aged football players make food choices

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The purpose of this project was to develop a theoretical model for how college-aged, football players make food choices. Sports nutrition is well researched in the area of nutrient intake and timing of ingestion, only one study that shows a theoretical model. This study utilizes collegiate football players to broaden knowledge of the process used by athletes to make food choices. Text data were analyzed using the qualitative approach of grounded theory to investigate the participants' action, interaction and reactions. The participants were theoretically sampled to represent an accurate ethnic, body type and skill set. The sample included two kickers, seven backs, two receivers and four linemen. There were four sophomores, nine juniors and two seniors and ten Caucasians, three Hispanics and two African-Americans. The interviews were analyzed using open, axial, and selective coding procedures. Member checks, peer debriefings, external audit and triangulation were used to ensure trustworthiness. Findings from this study indicated the primarily concern was with consuming high protein foods while attaining and maintaining adequate hydration levels with time as the primary proposition. Macronutrients, money value, quick fix foods, healthy food choices, routines and planned hydration were the categories that emerged from the text data. Carbohydrate consumption was a secondary consideration. A majority of the athletes planned their meals and snacks around their academic and athletic schedules. Results of this study provide professionals with food choice information to initiate and implement educational programs and behavioral changes for collegiate American Rules football players.

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