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# European Pharma Congress

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### Development and characterization of site specific peptide conjugated polymeric nanoparticles for efficient delivery of paclitaxel

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CD13 receptors are abundantly over expressed in tumor cells as well as in neovasculature. The CD13 receptors were selected as a targeted site and polymeric nanoparticles (NPs) as a targeted delivery system. By combining these, a cyclic NGR (cNGR) peptide ligand was coupled on the terminal end of polyethylene glycol-b-poly (lactic-co-glycolic acid) (PEG-b-PLGA) and prepared the dual targeted-NPs (cNGR-PEG-PTX-NPs) to enhance the intracellular delivery of anticancer drug to tumor cells and tumor endothelial cells via ligand-receptor interaction. In-vitro cytotoxicity studies confirmed that the presence of cNGR enhanced the cytotoxic efficiency by 2.8 folds in human umbilical vein endothelial (HUVEC) cells, while cytotoxicity was improved by 2.6 folds in human fibrosarcoma (HT-1080) cells as compared to non-specific stealth NPs. Compared with other tested NPs, cNGR-PEG-PTX-NPs revealed more cytotoxicity by inducing more apoptosis and higher intracellular uptake. The tumor volume inhibition rate was 59.7% in case of cNGR-PEG-PTX-NPs that was comparatively more with other formulations, indicating that cNGR-PEG-PTX-NPs could more effectively inhibit tumor growth. As a consequence, the cNGR-PEG-PTX-NPs play a key role in enhancing tumor therapeutic efficiency for treatment of CD13 receptor specific solid tumor.

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### Effects of energy drink major bioactive compounds on the performance of young adults in fitness and cognitive tests: A randomized controlled trial

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The consumption of beverages containing caffeine and taurine before exercising has been associated with increased physical and psychological performances. It is not clear the effect of every major compound in relation to the whole effect of the beverages and there is a lack in knowledge about their degree of safety for consumption. This study used a double-blind, placebo controlled, randomized, crossover design. Fourteen male soldiers performed different tests to measure their cardiorespiratory fitness, time to exhaustion, strength, power, concentration and memory after drinking 250 ml of one of the following beverages: one with 80 mg caffeine, one with 1000 mg taurine, one with 80 mg caffeine plus 1000 mg taurine, a commercial energy drink (Red Bull®) or a placebo drink. Subjects were caffeine-consumers that avoided caffeine during the day of evaluation. Differences between treatments were assessed. The mean ± SD values of VO2max, maximum heart rate, time to exhaustion, right handgrip strength, left handgrip strength, vertical jump, Grid test and Digits test were 61.3 ± 6.2 ml/kg.min, 196±6.8 beats per min, 17±1.2 min, 56.8±6.6 kgf, 53.1±5.9 kgf, 41.1±3.8 cm, 19.9±5.9 observed digits and 10.9 ± 3.1 remembered digits after drinking a placebo drink. Comparisons among the commercial drink, caffeine, taurine, caffeine plus taurine and placebo treatments did not show statistically differences.

**Conclusion:** The consumption of caffeine (80 mg) and taurine (1000 mg) or their combination does not increase the physical and cognitive ability in young adults during exercise.

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**Notes:**