**Electronic cigarette e-liquids deregulate the adhesion and proliferation of osteoblast cells**

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**Introduction:** Electronic cigarettes (E-cigarettes) was designed as a substitute for reducing the harmful effects of cigarette smoke, and it become too popular among young people. Although less harmful than cigarette smoke, e-cigarettes is not harmless due to the various constituents in the vaping liquids1-3. An e-liquid contains humectants such as propylene glycol (PG) and vegetal glycerin (VG), flavors and nicotine or not. Following vaping, the aerosol gets in contact with the different constituents of the oral cavity including soft and hard tissues4,5. Such contact could have significant damage on bone cells and tissues.

**Objective.** This study was to evaluate the effects of the e-liquid constituents on the morphology, the adhesion, and the proliferation of osteoblasts.

**Materials and Methods**: Human osteoblast cells (MG-63) were cultured in the presence or not of e-liquid that contains 70% PG - 30% VG only or with flavor, or nicotine at 12 and 18 mg/ml. The e-liquids were used at 0%, 1% or 5%. The cells were cultured for 24 h than the cell morphology was assessed by optical microscope observation, the adhesion was assessed by Trypan Blue (TB). The effect on cell growth was determined by MTT assay.

**Results and conclusions:** Cell morphology and viability were significantly altered in a dose-dependent manner of e-liquid. Morphologically the cells changed from an elongated to rounded shapes with disruption of their cytoplasm. Cell adhesion decreased as the concentration of e-liquid increased, as well as in the presence of a higher concentration of nicotine. These were confirmed by a decrease on osteoblasts proliferation, thus an increase of cell death confirming the toxic effect of the e-liquids on osteoblasts. Overall, this study points out the potential harm effects e-cigarettes on bone cells that could lead to impairment of bone regeneration and remodeling processes.

**References:**

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