Effect of oral co-administration of zeolite nanostructures and artichoke (*Cynara scolymus* L.) extract on urinary clearance of nicotine

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**Background and Aims:** Nicotine, the main pharmacologically active component in tobacco and cigarette, has some toxic effects and. In this study, the effects of artichoke (*Cynara scolymus* L.) and zeolite nano-structures on urinary clearance of nicotine were investigated.

**Methods:** Wistar rats were selected for this study. Rats were distributed into four groups (n=6) as follow: A) Animals were received oral administration of nicotine (0.2 mg/kg/day); B: Animals were received oral administration of nicotine (0.2 mg/kg/day) + nanozeolite (50 mg/kg/day); C: Animals were received oral administration of nicotine (0.2 mg/kg/day) + artichoke leaf extract (250 mg/kg/day) and D: Animals were received oral administration of nicotine (0.2 mg/kg/day) + artichoke leaf extract (250 mg/kg/day) + nanozeolite (50 mg/kg/day). Urine samples were collected from treated animals at predetermined times. In order to determination of urinary nicotine concentration, the samples were analyzed by HPLC.

**Results:** Oral administration of nanozeolites have been significantly increased the urinary excretion of nicotine in 3hr and 6hr post administration (p<0.05). Oral administration of artichoke leaf extract (ALE) can cause significant increase in urinary concentration of systematically adsorbed nicotine after 24hr post administration (p<0.05). In this study, it has been proven that the co-administration of zeolite nano-structures in accompany with ALE can statistically increase the elimination of nicotine via urinary flow at 3, 6 and 24 hr post administration (p<0.05). The synergism effects of nanozeolites and ALE on increase in urinary elimination of nicotine have been suggested.

**Conclusions:** It has been shown that the oral co-administration of nanozeolites and artichoke leaf extract (*Cynara scolymus* L.) synergistically increase the elimination of systematically absorbed nicotine as one the toxic and also addictive material in cigarette smoke.

**Keywords:** Nanozeolite; Artichoke (*Cynara scolymus* L.); Urinary elimination; Nicotine