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The protective effects of an herbal agent tutukon on ethylene glycol and zinc disk induced urolithiasis model in a rat model

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Abstract

To evaluate protective effects of Tutukon®, a plant derived herbal product, on the development of rat urolithiasis model. A total of 45 rats were divided into three groups namely; Group 1 (control group; drinking water + zinc disk), Group 2 (0.5 % ethylene glycol [EG] to drinking water + zinc disk) and Group 3 (study group—0.5 % EG + Tutukon + zinc disk). Moreover, zinc disks were placed into bladder of rats to serve as a nidus for stone development. Five rats from each group were killed at the end of the 1st, 2nd and 4th week. The level of bladder inflammation, the disk weights and the urine oxalate, calcium and pH values and were evaluated and compared. The inflammation scores of the pathological evaluation were not significantly different among three groups. At the end of the 28th day, weights of the zinc disks were significantly higher in Group 2 (394.4 ± 41.2) when compared to Group 1 (1517.5 ± 367.3) and Group 3 (386.2 ± 26.9) (p = 0.016). The disk weights increased gradually at 7th, 14th and 28th days in Group 1 (p = 0.018) and Group 2 (p = 0.009) while remained stable in Group 3 (p = 0.275). Urine calcium levels were not affected among three groups throughout the study period. At the end of the 28th day, while the urine oxalate levels of rats in Group 1 was lower than that of both

Group 2 (p = 0.046) and Group 3 (p = 0.008); Group 2 and Group 3 had similar oxalate excretion levels (p = 0.701). However, the difference was not significant. Tutukon seems to decrease stone deposition on zinc disks implanted in the bladder of rats. The exact mechanism of this preventive effect is, however, not well understood.

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