

EFFECTS OF GREEN TEA IN URINARY BLADDER CANCER: DATA FROM A MOUSE MODEL

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Urinary bladder cancer is one of the most common diseases around the world, associated with several risk factors [1-2]. *N*-butyl-*N*-(4-hydroxybutyl) nitrosamine (BBN) is a carcinogen able to induce preneoplastic and neoplastic urothelial lesions development in rodents [3]. Green tea (GT) is one of the most popular beverages whose beneficial effects on health have been demonstrated [4]. This study aimed to evaluate the effects of whole GT on urinary bladder cancer in male and female mice. The experiment followed the European (Directive 2010/63/EU) legislation. Forty-one ICR mice of five weeks of age (21 males and 20 females) were used. Animals from each gender were randomly divided into three experimental groups, as follows: *Males* - group I (BBN+GT) (n=8); group II (BBN) (n=7); group III (GT) (n=6); *Females* - group IV (BBN+GT) (n=7); group V (BBN) (n=7); group VI (GT) (n=6). BBN was administered to animals from groups I, II, IV and V by gavage, at a dose of 7.25 mg/mouse, 2 times/week, during 10 consecutive weeks. The whole GT (0.5%) was daily prepared and given *ad libitum* to groups I, III, IV and VI for 20 consecutive weeks. Animals were sacrificed and a complete necropsy was performed. A histological analysis of the urinary bladder was performed. Data was analyzed with ANOVA. Results were considered statistically significant for $p < 0.05$. Animals from groups not exposed to BBN (III and VI) did not develop any urothelial lesion. Animals from groups BBN+GT (I and IV) and BBN (II and V) developed only preneoplastic lesions. The number of inflammatory aggregates was lower in animals exposed to BBN that drank GT (I and IV), when compared with those only exposed to BBN (II and V). A statistically significant difference was observed between groups BBN (II and V) and groups GT (III and VI) ($p < 0.05$) (**Table 1**). The administration of GT infusion had no effect on urinary bladder cancer development, but reduced urothelial inflammation.

Table 1: Urothelial histopathological analysis (n; %) and inflammatory aggregates (mean±S.D).

Analysis	Groups	Male				Female	
		I (BBN+GT) n=8	II (BBN) n=7	III (GT) n=6	IV (BBN+GT) n=7	V (BBN) n=7	VI (GT) n=6
Histologica l analysis	Normal urothelium	0 (0%)	0 (0%)	6 (100%)	0 (0%)	0 (0%)	6 (100%)
	Simple hyperplasia	6 (75%)	3 (50.0%)	0 (0%)	3 (42.8%)	4 (66.7%)	0 (0%)
	Dysplasia	7 (87.5%)	5 (83.3%)	0 (0%)	4 (57.1%)	4 (66.7%)	0 (0%)
	Papilloma	2 (25%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Squamous metaplasia	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (16.7%)	0 (0%)
	Inflammatory aggregates	3.50 ± 4.46	4.67 ± 2.99 ^a	0.42 ± 0.90	3.50 ± 2.56	3.83 ± 3.13 ^b	0.25 ± 0.45

^a $p < 0.05$ vs Group III; ^b $p < 0.05$ vs Group VI

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