

Cancer Research

Tumor Biology

Abstract 4007: Chemopreventive effect of *Dioclea reflexa* seeds dietary inclusion in experimental colon carcinogenesis

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Abstract

The aim of the present study is to evaluate the colon cancer chemopreventive effect of dietary inclusion of *Diocleareflexa* seed, a popular Nigerian soup condiment in male albino rats following ten weeks of intra-rectal instillation with N-methyl-N-nitrosourea (MNU). Male albino wistar rats, randomly divided into 6 groups of 7 rats each, were fed *D. reflexa* dietary inclusion at 0%, 2.5%, 5%, and 10% for ten weeks with concomitant of intra-rectal instillation with MNU at a dose of 1.2mg/rat. At the end of feeding experiment, rats were sacrificed, blood and tissues were collected for biochemical, histological and immunohistochemical analysis. The flavonoids, total polyphenols and fiber content of the experimental diets were also assessed. The level of carcino-embryonic antigen (CEA) and malondialdehyde (MDA) were significantly ($p < 0.05$) higher in the MNU control and the MNU group with 2.5% dietary inclusion when compared with animals on basal diet, but feeding with 5 and 10% *Diocleareflexa* seed inclusion, prevented this elevation. There was accompanied with statistically significant ($p < 0.05$) boost in the levels of glutathione s-transferase (GST), superoxide dismutase (SOD), and catalase activities in the colon of MNU groups fed the experimental diets when compared with the MNU control group. Histological examination revealed deep mucosal ulceration with moderate interglandular inflammation in the colon of the MNU control group, but feeding with the *Diocleareflexa* seed included diets significantly reduced or eliminated these effects. Immunohistochemical examination of the colon showed moderate no damage of mismatch repair protein Mutl homolog 1 (MLH1) in the MNU groups fed 5 and 10% experimental diets as opposed to the MNU control and group. Total polyphenol content ranging from 83.2 ± 0.08 to 287.8 ± 0.01 mg/ml gallic acid equivalent (GAE)/200mg dry matter and flavonoid from 21.8 ± 0.04 to 54.6 ± 0.002 μ g/ml quercetin equivalent (QE)/200mg dry matter were observed increasing along with the percentage inclusion (2.5 to 100%) respectively. Also, some of our predictions were supported as there were strong correlation among the parameters assayed. In conclusion, the upregulation of endogenous antioxidant enzymes by *D. reflexa* inclusion was inversely correlated with down-regulation of markers of oxidative stress-related injuries, indicating *D. reflexa* contains constituents,

presumably, fibers and polyphenols, especially, flavonoids that significantly blocked initiation of carcinogenesis and prevented the development of pathological lesions. Hence, *D. reflexa* seeds can be of great health benefits to the population that regularly consumes it.

Key words: *Dioclea reflexa* seeds; dietary inclusion; colon carcinogenesis; cancer chemoprevention; experimental carcinogenesis; dietary supplementation

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