

# **Antitumorogenic Activity of Dongchunghacho Rice on DMH-induced Colon Carcinogenesis in F344 Rat**

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Dongchunghacho rice, produced by cultivating Dongchunghacho fungus on rice, could be an effective functional food because it offers added value to rice and thus increases rice consumption. In this study, we evaluated the effect of Dongchunghacho rice (polished rice cultivated with *Paecilomyces tenuipes* (PT) or *Cordyceps militaris* (CM)) on the process of colon carcinogenesis and gene expression of cyclooxygenase-2 (COX-2) and inducible NO synthase (iNOS) in male F344 rats. The animals were then divided into 3 groups; Control group fed high fat-low fiber control diet (NC, 65% rice as carbohydrate source), 2 supplemented groups fed Dongchunghacho rices (PT and CM, 20% Dongchunghacho rice of 65% rice). 1 week after beginning the diets, rats were treated with DMH (30mg/kg, s.c.) for 6 weeks; dietary treatments were continued for the entire experiment. 9 weeks after DMH injection, rats supplemented with Dongchunghacho rices, either PT or CM, had a significantly lower number of aberrant crypt foci than the control group. DMH-induced colon tumors had significantly greater COX-2 and iNOS gene expression than the corresponding normal mucosa. However, treatment with Dongchunghacho rices induced inhibitory effect on the colon tumor overexpression of COX-2 and iNOS. Our results provide evidence that Dongchunghacho rice has a protective effect on the process of colon carcinogenesis, suppressing the development of preneoplastic lesions, possibly by modulating COX-2 and iNOS gene expression in tumors, suggesting that Dongchunghacho rice has chemotherapeutic activity.