The Effects of (+)-Gossypol on 11β-HSD and the Concentration of Corticosterone and Dehydrocorticosterone in Mice Serum and Tissues

Xiangjun QIU 1,2#, Wanshu LI 1,3#, Junwei LI 1, Mengmeng WANG 1, Jia WANG 1, Lianguo CHEN 1, Wei SUN 1, Likang ZHANG 1, Congcong WEN 1, Renshan GE 1 & Guoxin HU 1*

1 School of Pharmacy, Wenzhou Medical College, Wenzhou 325035, China
2 Medical College of Henan University of Science and Technology, Luoyang 47100, China
3 Ningbo Municipal Hospital of Traditional Chinese Medicine, Ningbo 315012, China

SUMMARY. 11β-hydroxysteroid dehydrogenase (11β-HSD) plays an important part in mediating glucocorticoid action, catalyzing the interconversion of corticosterone (B) and dehydrocorticosterone (A) in rodents. The aim of our study is to investigate the effects of (+)-gossypol (G+) on 11β-HSD. Adult ICR mice were given B and B + (G+) by intraperitoneal injection. The activity of 11β-HSD was evaluated by measuring the ratio of A and B, meanwhile the effects of (+)-gossypol on the conversion rate of B to A was determined with HPLC. Serum A/B levels of the B+(G+) group decreased by 2.42, 7.32, 17.85, 31.39, and 40.02 % compared to the B group at each measured time interval. A/B levels at 1 h for the B + (G+) group decreased by 43.78, 21.29 and 34.47% in liver, kidney and adrenal glands, respectively, in comparison to the B group. However, (+)-gossypol had no effect on brain and testis. (+)-Gossypol was an inhibitor of 11β-HSD.

KEY WORDS: Corticosterone, Dehydrocorticosterone, (+)-Gossypol, HPLC, 11β-hydroxysteroid Dehydrogenase.

* Author to whom correspondence should be addressed. E-mail: wzhhgx@yahoo.com.cn. # These authors contributed equally to this work.