



Promoter methylation negatively correlated with mRNA expression but not tissue differential expression after heat stress

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ABSTRACT. DNA methylation plays a central role in gene expression. In this study, we detected the promoter methylation pattern of the chicken heat shock protein 70 (*HSP70*) gene and its association with messenger RNA (mRNA) expression before and after heat shock. The results showed that mRNA expression increased in response to heat stress and peaked at 3 h before dropping. Hypomethylation of the *HSP70* promoter occurred in all of the groups studied, but the difference between groups within tissue type was not significant. The DNA methylation level of the control and the 6-h treatment groups was slightly higher than that of the 3-h treatment group in brain tissue and leg muscle. Correlation analysis between mRNA expression and DNA methylation of *HSP70* showed that DNA methylation was negatively associated with mRNA expression in leg muscle ($P = 0.0124$), indicating that DNA methylation may be negatively associated with the expression of *HSP70*, although the difference was not significant. We concluded that the expression of *HSP70* is heat inducible and tissue dependent and that heat induction

may correlate with DNA methylation pattern in the *HSP70* promoter, whereas tissue dependence is unrelated to DNA methylation pattern.

Key words: *HSP70*; DNA methylation; Heat inducible