

# INHIBITION OF HISTONE ACETYLATION BY CURCUMIN REDUCES ALCOHOL-INDUCED FETAL CARDIAC APOPTOSIS

Yan X.C. (1, 2), Wu X.Y.(1), Lv T.W.(1), Pan B.(1, 2), Liu L.J.(2), Tian J(1)

1 Heart Centre, Children's Hospital of Chongqing Medical University, Chongqing, PR China.

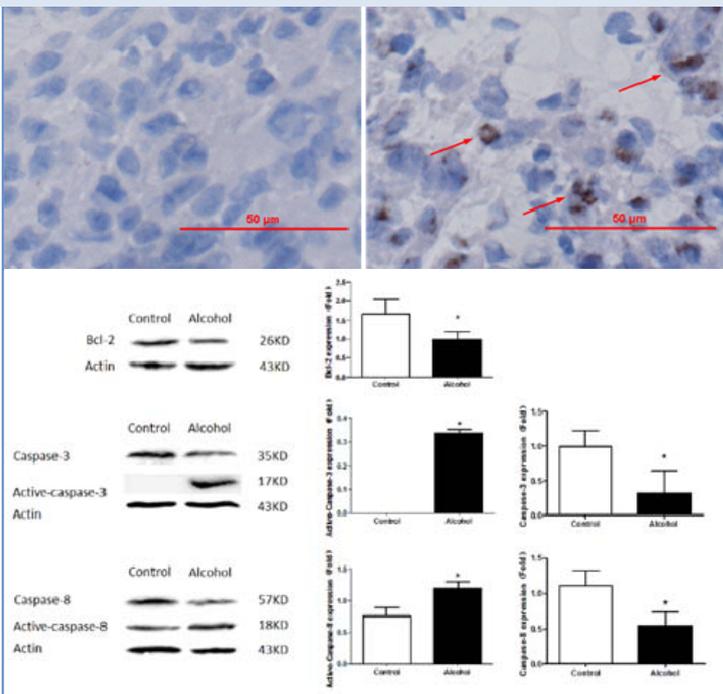
2 Key Laboratory of Developmental Disease in Childhood (Chongqing Medical University), Ministry of Education, Chongqing, PR China.

## INTRODUCTION

Prenatal alcohol exposure may cause cardiac development defects. It is known that alcohol can induce cardiac apoptosis and myocardium dysplasia; however, the underlying mechanisms are not yet clear. Our previous studies have suggested that histone modification plays a vital role in alcohol induced fetal cardiac developmental abnormalities. This study investigated the effect of histone acetylation regulation mechanisms on alcohol induced cardiac apoptosis.

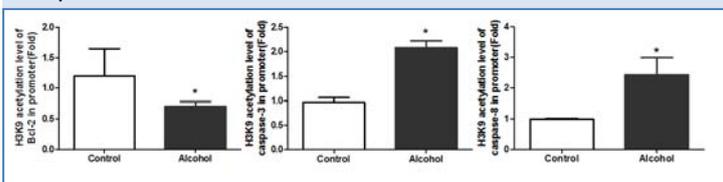
## RESULT I :

TUNEL assay revealed that positively stained cells were significantly higher in the alcohol group. Western blotting revealed that alcohol increased active-caspase-3 and active-caspase-8, whereas it reduced caspase-3, caspase-8 and bcl-2.



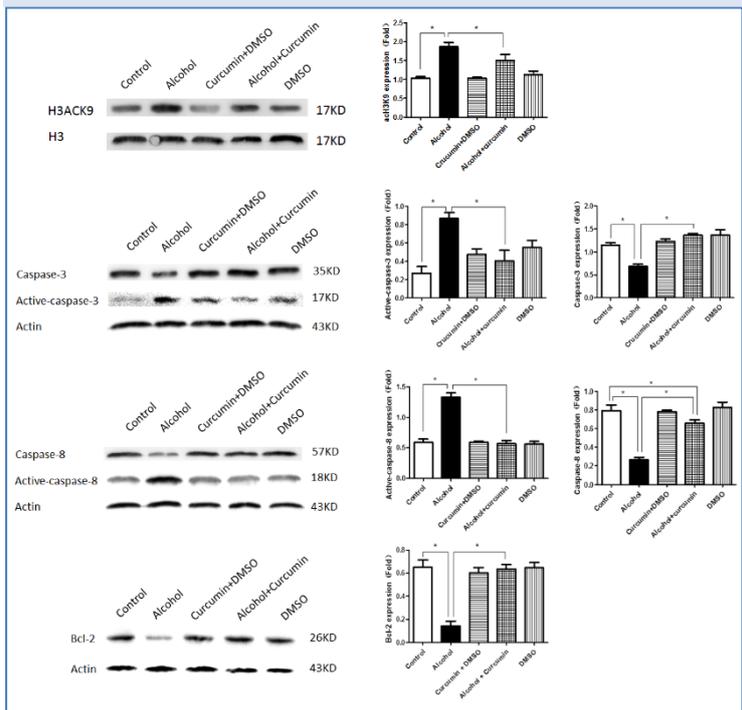
## RESULT II :

ChIP assay showed that alcohol significantly increased the acetylation of histone H3K9 in the promoter of caspase-3 and caspase-8, and decreased the acetylation of histone H3K9 in the promoter of bcl-2.



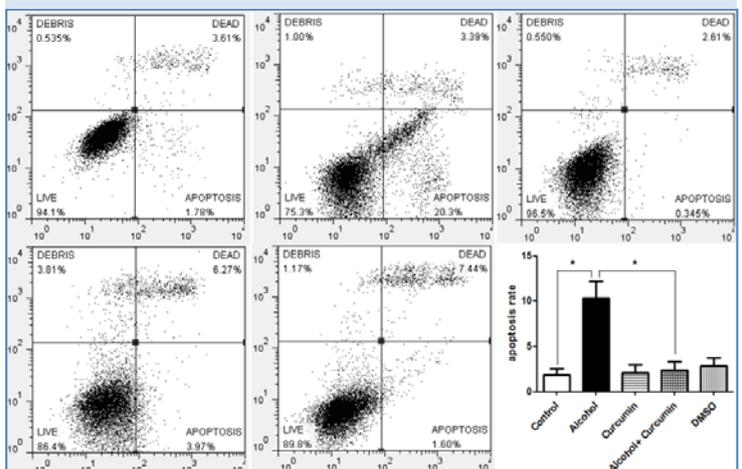
## RESULT III :

Alcohol treatment increased the expression of active-caspase-3, active-caspase-8 and the acetylation of histone H3K9, and decreased the expression of caspase-3, caspase-8 and bcl-2 in cardiac cells. When we intervened with curcumin the up-regulation of active-caspase-3, active-caspase-8 and acetylation of histone H3K9, and the down-regulation of caspase-3, caspase-8 and bcl-2 were all reversed.



## RESULT IV :

Flow cytometry assay demonstrated that the high apoptosis level induced by alcohol in cardiac cells were down-regulated after curcumin treatment.



**CONCLUSION:** Histone modification may play an important role in mediating alcohol induced fetal cardiac apoptosis, possibly through the up-regulation of acetylation of H3K9 in the promoters of apoptosis genes. Curcumin may reverse alcohol-induced fetal cardiac apoptosis.