

Effects of Antioxidants on the Antioxidant and Apoptosis Genes Expression of IVM/IVF Hanwoo Embryos

Jang HY¹, Park CK¹, Cheong HT¹, Kim CI¹, Yim, SV², Kim SS, Park DH¹, Yang BK¹

College of Animal Resource Science¹, Department of Pharmacology², College of Medicine, Kangwon National University,

To investigate the effects of two antioxidants, aesculeitin and taurine, expression of apoptosis related genes and antioxidant enzyme gene in preimplantation Hanwoo embryos was determined by modified semi-quantitative single cell RT-PCR.

Hanwoo embryos derived from *in vitro* maturation /*in vitro* fertilization were cultured in 5% CO₂ and 5% O₂ in CR₁aa medium at 37°C. Aesculeitin and taurine were added to medium at concentration of 1µg/ml and 2.5mM, respectively. The expression of each gene was analyzed using modified semi-quantitative single cell RT-PCR.

Expression of *cox-2*, *p53*, and *bax* mRNA was inhibited after addition of antioxidant. Expression of catalase, Cu-Zn-superoxide dismutase (*Cu-Zn-SOD*), Mn-superoxide dismutase (*Mn-SOD*), and glutathione peroxidase(*GPx*) mRNA was induced in antioxidant treatment.

These results suggest that various apoptosis and antioxidant genes play a crucial roles in *in vitro* culture of Hanwoo IVM/IVF embryos.

Keywords) *Hanwoo embryo*, *RT-PCR*, *antioxidant*, *apoptosis*