

Analysis of Gene Expression in Cloned Bovine Placentae

Hong Rae Kim¹, Jae Ku Kang¹, Jong Taek Yoon², Hwan Hoo Seong³,
Min-Rae Jo⁴, Chang Sik Park¹ and Dong Il Jin¹

¹ *Research Center for Transgenic Cloned Pig, Chungnam National University*

² *Genetic Engineering Institute, Hankyong National University*

³ *National Livestock Research Institute, RDA*

⁴ *ProteomeTech Inc.*

Proteomics analysis by 2-D gel electrophoresis and mass spectrometry was performed using 3 placentae of postnatal death just afterbirth derived from SCNT of Korean native cattle and 3 normal placentae obtained by after birth of AI fetuses. Proteins within isoelectric point range of 4.0 to 7.0 and 6.0 to 9.0 separately were analyzed in 2-D electrophoresis with 3 replications of each sample. Some differentially regulated proteins in SCNT placenta were identified as TIMP-2, vimentin and SOD proteins. To ensure the identified proteins were truly differentially regulated in SCNT placenta, a small portion of the protein lysates were subjected to Western blotting with the antibodies. Indeed, Western blot analysis revealed a significant increase of TIMP-2 protein level and a decreased level of vimentin and SOD in SCNT placenta compared with normal. Our results revealed abnormal expression profiles of key proteins in placentae derived from SCNT and suggested expression abnormality of these genes in SCNT placentae resulting in fetal losses following SCNT.

Key words) *Proteomics, 2-D gel electrophoresis and mass spectrometry, cloned placenta, Western blot analysis*