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Detection of circulating colorectal cancer cells using MAGE A1-6 and hTERT RT-PCR

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Background: To detect circulating colorectal cancer cells, we had developed melanoma associated gene (MAGE) A1-6 and human telomerase reverse transcriptase (hTERT) RT-PCR system. We applied the system for the patients of colorectal cancer patients to detect circulating tumor cells

Methods: We have used 59 bloods of colorectal cancer patients and 50 bloods from the patients of benign diseases. The patients had been evaluated and diagnosed at the Daegu Catholic University Medical Center. After removal of red blood cells, cancer cells were enriched by magnetic separation with anti-CD45 microbeads (Miltenyi Biotec, Auburn, CA). The CD45 negative cells were extracted with RN easy Mini Kit (Qiagen, Duesseldorf, Germany). To amplify the MAGE A1-6 and the hTERT gene, gene specific RT-nested PCR and oligo-dT RT PCR were used using Light Cycler Fast Start DNA Master SYBR Green I (Roche, Mannheim, Germany). GAPDH gene was used as a control gene.

Results: In the blood of benign diseases, MAGE A1-6, hTERT and the MAGE + hTERT gene RT PCR showed the specificities of 92.0%, 88.0% and 80.0%. In the blood of colorectal cancer patients, MAGE A1-6, hTERT and the MAGE + hTERT gene RT PCR showed the sensitivities of 25.0%, 33.9% and 47.5%. Compared with the positive rates of T1 and T2 stage (N=15), those of T3 and T4 state (N=44) were significantly higher: hTERT 13.3% vs. 29.5%, MAGE A1-6 26.7% vs. 36.4% and MAGE + hTERT 26.7% vs. 54.5%.

Conclusion: MAGE A1-6 and hTERT gene RT PCR showed good result for CTCs detection in the patients of colorectal cancer patients. MAGE A1-6 and hTERT gene RT PCR results correlated with their T stage of colorectal cancer.

Biography:

Professor Chang-Ho Jeon received his M.D. at the University of Keimyung (South Korea). He obtained specialist degrees in Laboratory Medicine at Yeungnam University (South Korea). From 1989 to 1995, He worked as Associate Professor at Medical School of DongGuk University, in Pohang, Korea. In 1995, He moved to Medical School of Daegu Catholic University, then have worked for this University as a Professor of Laboratory Medicine. From 2008 to 2012, He had worked as a Director of adult stem cell research center in Daegu Catholic University Medical Center. In 2008, 2012, and 2013, He obtained a distinguished scholarship award from Korean Association of Quality Assurance, Korean Society of Laboratory Medicine and Korean Cancer Association respectively. From 2015 he is working as a vice president of Korean society of genetic and molecular diagnosis. Main fields of his interest are Molecular diagnosis of Cancer, Circulating tumor cells and anti-cancer drug susceptibility. He has authored and co-authored about 100 scientific articles.