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Development of colorectal carcinoma vaccine candidates using plant expression GA733-Fc

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The GA733-2, colorectal carcinoma associated antigen and epithelial cell adhesion molecule (EpCAM), is highly expressed on the surfaces of human colorectal carcinoma cells. It was utilized to produce a vaccine for colorectal cancer in a plant system. To develop a vaccine using a plant system, recombinant protein rGA733-2 and rGA733-2-Fc genes were cloned into plant expression vector (pBINPLUS) with an ER targeted signal peptide and KDEL retention codon. The cloned vectors were introduced into tobacco plants using *Agrobacterium* mediated stable transformation or agro-infiltrated transient transformation. The recombinant proteins, rGA733-2, rGA733-Fc and Fc were purified from transgenic tobacco leaves and evaluate their anti-cancer effects using MC38 cancer cells. Only the rGA733-Fc showed anti-cancer effects. To develop an edible colorectal cancer vaccine, the rGA733-Fc gene was introduced into tomato plants (*Solanum lycopersicum* cv. Micro-Tom). The rGA733-Fc expressed transgenic tomato fruits were administered orally to C57BL/6J mic and then colorectal cancer was induced in the oral treatment mice using MC38 cells injection. The plant derived rGA733-Fc treated mice showed amelioration of colorectal cancer is caused by rGA733-Fc induced anti-cancer immune response stimulation.

Biography

Young Hee Joung has completed her PhD from Korea University in South Korea and Postdoctoral studies from ARS, USDA. She is a Professor of School of Biological Sciences and Technology, Chonnam National University. She has published several papers in journals about plant molecular farming field.

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