

possess antigen binding sites that include variable domains of heavy and light chains (VH and VL domains) in which the two domains are connected by a flexible linker segment. Pentadeca linker is one of the most common linkers which are the polypeptides with 10 to 25 hydrophilic amino acids in length. These antibodies are mainly derived from genes separated from mouse hybrid cells and their antigen attachment ability is similar to the monoclonal antibody which they are derived from. The first monoclonal antibody was produced by Huston and colleagues based on the recombinant DNA and protein engineering, derived from monoclonal anti-digoxin antibody expressed in *E. coli* bacteria. These antibodies are the basis of investigations on therapeutic approaches of several malignancies such as esophageal and breast cancers. Trastuzumab and Gefitinib are anti-EGFR antibodies mainly used in the studies on the esophageal cancer. According to previous studies the combination of anti-EGFR drugs and radiation can be effective in prognosis of this disease (29).

Several studies have suggested the requirement of future investigations on drugs which act through EGFR for the treatment of esophageal cancer cells. Kono in 2006 resulted that these drugs had anti-proliferative and cell cytotoxicity antibody-dependent effects against cancer cells (30,31).

Partial response to Gefitinib has been observed in patients with EGFR overexpression and SCC pathology which showed the over activity of the mentioned drug in treatment of ESCC cell line (1). Gotoh mentioned that although this biomarker may be effective in predicting the SCC response to chemoradiotherapy, future studies are needed for the definite conclusion (32).

Gene therapy is in progress as a potential

therapeutic method in controlling the genetic process of cancer cells and treatment of metabolic diseases. There are wide varieties of approaches in the field of gene therapy which are varied from a substitution of single mutated or deleted tumor suppressor gene to the stimulation of the immune system against cancer cells (33).

Conclusion

Compared Genetic examinations on EGFR gene have contributed to the development of gene therapy methods. Several studies have been conducted on the EGFR mutations in different cancers with limited cell line. Future researches on EGFR and its prevalence in esophageal cancer can be effective in improving the anti-cancer therapeutic methods such as monoclonal antibodies, gene therapy, and also the prognosis of the disease.

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Conflict of Interest

The authors declare no conflict of interest.

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