



Study of *PIK3CA*, *BRAF*, and *KRAS* mutations in breast carcinomas among Chinese women in Qinghai

Y.L. Wang¹, X. Dai¹, Y.D. Li², R.X. Cheng¹, B. Deng¹, X.X. Geng¹ and H.J. Zhang¹

¹College of Life and Science, Huaibei Normal University, Huaibei, China

²Biological Resources in Qinghai, School of Medicine, Qinghai University, Xining, China

Corresponding author: H.J. Zhang

E-mail: haijunzhang@163.com

Genet. Mol. Res. 14 (4): 14840-14846 (2015)

Received June 11, 2015

Accepted September 23, 2015

Published November 18, 2015

DOI <http://dx.doi.org/10.4238/2015.November.18.49>

ABSTRACT. Phosphatidylinositol-3-OH kinase and RAS-activated signaling pathways play an important role in tumor formation. Abnormalities in relevant genes play essential roles in the occurrence and development of many human cancers. Studies of breast cancer have mainly focused on the women in western countries, but few studies have examined the frequency of mutations in *PIK3CA*, *BRAF*, and *KRAS* in Chinese breast cancer patients. In this study, we conducted sequence analysis of *PIK3CA*, *BRAF*, and *KRAS* and determined relationships with the occurrence of breast cancer in women from Qinghai. DNA was extracted from 25 cases of human breast cancer tissue samples. *PIK3CA*, *BRAF*, and *KRAS* mutation analysis was performed by polymerase chain reaction and DNA sequencing. No mutations were found in *PIK3CA*, *BRAF*, and *KRAS* of adjacent tissues. However, *PIK3CA* mutations were observed in 32% (8) of the 25 breast cancer tissues examined, in which exon 9 accounted for 4% (1), exon 20 accounted for 28% (7), and no mutations were found in exon 1 of *PIK3CA*. Sequencing of exon 2 of *KRAS* suggested that 20% (5) of the 25 samples harbored a mutation and 16% (4) of *BRAF*

harbored a mutation. Any mutation in these 3 oncogenes may induce the occurrence and development of breast cancer.

Key words: BRAF; Breast cancer; KRAS; Mutation; PIK3CA