BRAF AND NRAS ARE FREQUENTLY MUTATED IN MELANOMA

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Gene mutations frequently occur in all types of cancers and can be used for diagnosis, prognosis, and response to therapy. In melanoma, the BRAF and NRAS genes are frequently mutated at particular codons. We analyzed 30 melanoma and 4 benign nevi for mutations in exons 11 and 15 of the BRAF gene and exons 2 and 3 of the NRAS gene. Mutations were initially detected by PCR amplification scanning using fluorescent melting curve analysis. Fluorescent melting curve analysis is a method of detecting sequence alterations within small DNA PCR amplicons. Exons are PCR amplified and slowly heated in the presence of a double-strand DNA binding dye while fluorescence is continuously monitored. It was found that 64% of samples contained mutations in either the BRAF or NRAS genes. Of the BRAF alterations, 71% were the common T1796A substitution, but the samples also contained GT1795-1796AA and GT1795-1796AG substitutions. The NRAS gene contained various substitutions and included C435A, A436G, A436T, all of which altered the glutamine of codon 61. All BRAF and NRAS alterations were mutually exclusive. Mutations in BRAF and NRAS are frequently found in melanoma and may lead to proliferation and progression of the disease.