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Evaluating the Superoxide Dismutase-1 status in Wild Type and Mutant at codons 12 and 13 of KRAS gene Spectrum for the Patients with Sporadic Colorectal Cancer

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Abstract: KRAS gene is involved in G protein- mediated signal transduction pathway and has constitutive GTPase activity, which is a loss when the gene is mutated. It was reported that mutation in KRAS codons 12 and 13 are the most frequently detected mutation (hot spots) in human colorectal cancers. SOD-1 is an enzyme that in humans is encoded by the SOD1 gene, located on chromosome 21 and it is one of three human superoxide dismutases. The aim of the current study was to evaluate the role of wild-type and mutant genotyping of KRAS gene on the SOD-1 levels and its related trace elements (copper and zinc) in patient with sporadic colorectal cancer who received adjuvant chemotherapy regimen. This investigate was done by extraction of DNA from whole blood and used PCR-RFLP technique to determine the different genotypes of KRAS gene. SOD-1 concentration was assessed by competitive ELISA method. The results of this study showed the frequency of WT and mutant alleles of KRAS gene were 61.5% and 38.5%, respectively. Also, the results showed significant decreasing in the levels of SOD-1 in mutant status of patients with sporadic CRC compare to WT and control group ($p<0.05$).
Keywords: Sporadic colorectal cancer, KRAS gene, SOD-1, wild-type, mutant alleles.

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