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# Abstract Form

Title

INVESTIGATION OF EPIDERMAL GROWTH FACTOR RECEPTOR VARIANTS IN NON-SMALL CELL LUNG CANCER PATIENTS IN SERBIA

Authors

Jasmina Obradovic[1] and Vladimir Jurisic [2]

Affiliation

1) Department of Sciences, Institute for Information Technologies Kragujevac, University of Kragujevac, Kragujevac, Serbia

2) Faculty of Medical Sceinces, University of Kragujevac, Serbia

Tel /Fax/e mail

Text

**Introduction:** Examining the epidermal growth factor receptor (EGFR) mutations has significantly contributed to a better diagnosis of non-small cell lung cancer (NSCLC). Other variants in the *EGFR* gene, a single nucleotide polymorphisms (SNPs), are recognized as predictors of therapy response. They are correlated with progression-free (PFS) and overall survival (OS) in NSCLC patients with TKI therapy.

**Methods**: Bearing all this in mind, this study analyzed *EGFR* gene variants (SNPs) -216G>T, -191C>A, and 181946C>T in the NSCLC patient population of the Republic of Serbia. Firstly, the optimization of the polymerase chain reaction (PCR) was carried out to determine the conditions for the genotipisation of three SNPs. Then, the frequency of SNPs in patients was compared to healthy controls, as well as concerning the clinical stage of the disease or the other demographic characteristics of the subjects.

**Results:** Pearson chi-square test showed very strong evidence of the association between age and death due to lung cancer (Pearson chi-square = 43.439, df = 2, $p < 0.001$), as well as between ever smoking and death due to lung cancer (Pearson chi-square = 31.727, df = 1, $p < 0.001$). When the dominant genetic model (GG vs. GT+TT) was used for -216G>T, we found a significant association ($p = 0.012$) between the -216GG genotype and NSCLC patients within the smokers' subgroup. So, carriers of the -216GG genotype had a higher risk (OR = 4.33, 95 % CI = 1.324-14.179) than non-carriers (GT and TT) for developing non-small cell lung cancer patients. We investigated the methylation status of other molecular markers but found no association with these *EGFR* variants.

**Discussion and Conclusions:** The findings obtained with this study and studies by other authors have shown that before conducting molecular analyses in daily clinical practice, examining these *EGFR* molecular markers could be beneficial since they could significantly improve diagnosis, assessment of therapy effects, and treatment outcomes for NSCLC patients.

**References:** 1] Obradovic J et al., Mol Biol Rep. 2021; 48(4):3593-3604. 2] Jurisic V et al., n J. Mol Biol Rep. 2023; 50(2):971-979. 3] Obradovic J et al., Oncol Lett. 2022; 23;25(2):62.

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**Presenting Author Information**

Last Name Obradovic First name Jasmina Middle Initial M

Institution 1) Department of Sciences, Institute for Information Technologies Kragujevac, University of Kragujevac, Kragujevac, Serbia 2) Faculty of Medical Sceinces, University of Kragujevac, Serbia

Mailing Address Svetozara Markovica 69, 34000 Kragujevac, Serbia

Tel Fax Email jurisicvladimir@gmail.com