Title: Diversity, frequency, and significance of the methods for detection *EGFR* variants in NSCLC patients

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Acknowledgments

This work was supported by the Ministry of Education, Science and Technological Development, Republic of Serbia. Agreement No. 451-03-9/2021-14/200378

Abstract

Lung cancer is the leading cause of death worldwide with non-small cell lung cancer (NSCLC) as its predominant form. Variants in the epidermal growth factor receptor (EGFR) gene highly correlated with survival in NSCLC patients. The aim of this literature search was screening or target methods for the *EGFR* variants detection with diagnostic and prognostic potential in the clinical and basic research. The three electronic databases, ISI Web of Science, Pub Med, and Scopus were searched with specific key-words matching the inclusion criteria. The studies were considered eligible if they were published from 2010 until 2020 without region restriction. Otherwise, reviews, meta-analyses, editorials, case reports, and duplicates were excluded. The obtained 5647 articles were screened with the final 1132 full-text articles included in qualitative analysis. The final result showed that over the years the polymerase chain reaction (PCR), followed by sequencing methods were mostly applied in clinical research, while the western blot (WB) techniques were predominant in basic research. For all of the screened methods, the highest score was detected in Asia. Upgraded or recently developed methods were found with this search, but in smaller frequencies than conventional methods, which is probably due to equipment or expertise restriction. On the other side, the cost-effectiveness and adaptability of the conventional methods made them widely applied in the detection of *EGFR* variants to improve progression-free and overall survival in NSCLC patients.

Keywords: EGFR, Methods, Variants, Polymorphism, Mutation, NSCLC

EGFR, variants, NSCLC