Introduction: LINE-1 (L1) are retrotransposons with the ability of autonomous mobilization. They are present in all human's genome and comprise the 17% of it. In somatic cells, L1 is silenced; nevertheless, a number of observations, in human cancer cells, indicate that L1 sequences become reactivated and are capable of copying themselves and mobilizing to different genomic locations, leading to rearrangements and chromosomal breaks. Literature and experimental data demonstrated that LINE-1 activity is increased in various types of cancer cells and tissues. The aim of the present study was to compare L1 copies between lung cancer samples and healthy individuals.

Materials & Methods: Cells were isolated from commercial cancer cell lines CALU-1, COR-L105 and COLO699N (provided by ECACC), representing lung cancer. PBMCs were isolated from three healthy individuals. FISH was performed with L1-ORF2 probe, which was produced with endpoint PCR and fluorescent. After DAPI staining, the slides were analyzes with Cytovision imaging software (Leica Biosystems). More than twenty nuclei of each sample were recorded. In addition, RNA was extracted and qPCR for L1-ORF2 was performed in triplicates for the above cells. Finally, statistical analysis was performed in both experimental panels (p<0.05 was set as significant). 18sRNA was used as housekeeping gene.

Results: FISH experiment analysis revealed that the copies of L1-ORF2 in cancer samples were higher (49.55 ± 11.2) than in normal individuals (7.1 ± 0.66). More specifically, COR-L105 gave 39±9 signals for L1, COLO699N 58.5 ± 13 and CALU-1 52.4 ± 12 signals. On the other hand the 3 healthy individuals gave 8.3 ± 0.6, 6.1 ± 0.4 and 7 ± 0.9. On the contrary, the gene expression analysis did not revealed any significant difference between the two groups that were studied.

Conclusion: It has been proved that at genome level, the copies of L1-ORF2 are higher in cancer samples. Therefore, since it may be involved in tumorigenesis, it might be used as a potential biomarker. More samples in more cancer types need to be studied, for L1-ORF2 to be used at clinical level.

Disclosure of Potential Conflicts of Interest
None of the authors of the above study has declared any conflict of interest

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