Third International Conference
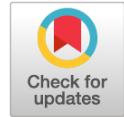Genetically modified organism. The History, Achievements, Social and Environmental Risks

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Natural GMOs inside the genus *Arachis* L.

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Cultivated peanut is an allotetraploid species that received the A and B genomes from *Arachis duranensis* and *A. ipaensis*. Homologs of the agrobacterial cucumopine synthase gene were previously found in both genomes as a result of horizontal transfer [1]. These sequences are found both in ancestral species and in cultivated peanuts. In addition to them, natural GMOs are *A. monticola* and *A. stenosperma*. How widespread natural GMOs are within the genus *Arachis* is currently unknown. The aim of our study was to search for natural GMOs within the genus *Arachis* and to analyze the polymorphism of natural transgenes out the studied species.

METHODS: Gene sequencing for various *Arachis* species was determined using the bwa [2], GATK [3] and samtools [4] packages based on NGS data aggregated in the SRA NCBI database.

RESULTS: We have found homologues of the cucumopine synthase gene in the genomes of *A. appressipila, A. batizocoi, A. cardenasii, A. correntina, A. diogoi, A. duranensis, A. glandulifera, A. helodes, A. hoehnei, A. ipaensis, A. macedoi, A. magna, A. monticola, A. paraguariensis, A. pintoi, A. pusilla, A. rigonii, A. stenophylla, A. stenosperma, A. trinitensis, A. valida, A. villosa*, and also characterized the intraspecific variability of the gene in cultivated peanuts. In 16 of the 22 species studied, the gene is full-length. The report will consider the possibility of using the cucumopine synthase gene in peanut phylogenetic studies.

CONCLUSION: The list of species of natural GMOs within the genus Arachis today includes 23 species.

Keywords: nGMO; Arachis; biodiversity.

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