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Ready-to-use system for GMO detection to support the Brazilian biosafety monitoring program

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The cultivation of GMO has become possible to supply the global food demand. More than 190 cultivars are commercialized in 29 countries and that GMO crops grew by 8% from 2010-2011. Brazil is the second largest GMO world producer, thus with the implementation and validation of detection methods of the multivariate GM events, will contribute to the monitoring of non-authorized events and compliance labeling, assuring for the consumers their right to choose. The constant increase of different GMO shows the need to develop multi target methods.

These analytical approaches allow the simultaneous detection of several targets and have been developed recently in order to deal with the challenges of an increase in the number of authorized GMO in the world. Among all alternatives tested, real-time PCR (q-PCR) proved to be the most successful, accurate and powerful technique and nowadays is the method of choice for GMO quantification. GMO detection system for a routine work requires fast and reliable analysis.

For this purpose, it was developed an easy to use system for detecting different GM events. This approach represents a potential ready-to-use analysis and aims to develop and provide a fast detection of these events in a single experiment. q-PCR plates were prepared with primers and probes already validated for MON863, MIR604, DAS-59122-7 and MON89788 detection. These plates were submitted to lyophilisation and, subsequently, the reagents were resuspended and the reaction were ran in SDS ABI PRISM 7000 (Applied-Biosystems) using TaqMan detection system.

The comparison between Threshold Cycle (Ct) from pre-lyophilisation and post-lyophilisation showed minimal lost in the reaction yield, less than 1,00 Ct. In some cases the efficiency was higher than the pre-lyophilisation system (89% to 106%), due to, probably, post-ressuspended reagents homogenization. The results showed the possibility for developing a ready-to-use GMO detection system for Brazilian monitoring programs.

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