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# Evaluation of Real Time PCR Methods for Food Safety

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**Abstract :** In the last decades, real-time PCR has become a reliable tool preferred to use in many laboratories for pathogen detection. This technique allows for monitoring target amplification via fluorescent molecules besides admit of quantitative analysis by enabling of convert outcomes of thermal cycling to digital data. Sensitivity and traceability of real-time PCR are based on measuring of fluorescence that appears only when fluorescent reporter dye bound to specific target DNA.The fluorescent reporter systems developed for this purpose are divided into two groups. The first group consists of intercalator fluorescence dyes such as SYBR Green, EvaGreen which binds to double-stranded DNA. On the other hand, the second group includes fluorophore-labeled oligonucleotide probes that are separated into three subgroups due to differences in mechanism of action; initial primer-probes such as Cyclicons, Angler®, Amplifluor®, LUX™, Scorpions, and the second one hydrolysis probes like TaqMan, Snake assay, finally hybridization probes, for instance, Molecular Beacons, Hybprobe/FRET, HyBeacon™, MGB-Eclipse, ResonSense®, Yin-Yang, MGB-Pleiades. In addition nucleic acid analogues, an increase of probe affinity to target site is also employed with fluorescence-labeled probes. Consequently, abundant real-time PCR detection chemistries are chosen by researcher according to the field of application, mechanism of action, advantages, and proper structures of primer/probes.

**Keywords :** fluorescent dye, food safety, molecular probes, nucleic acid analogues
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