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A new construct specific real-time PCR method for screening GMO ingredients with *gat*-*tpinII* cassette in foods, feeds and seeds

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1 A new construct specific real-time PCR method for screening

2 GMO ingredients with *gat-tpinII* cassette in foods, feeds and seeds

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9 Abstract

10 With the number of genetically modified (GM) events authorized or pending for
11 authorization yearly growing steadily, screening approaches need to be updated to enable full
12 coverage and better discrimination of all these events. A construct-specific quantitative
13 polymerase chain reaction (qPCR) assay for screening genetically modified organisms
14 (GMO) with *gat-tpinII* cassette was developed in response to that need. The specificity of
15 the built method was evaluated by testing commercial GM events and the sensitivity and
16 repeatability were also assessed and validated. The limit of detection (LOD) could be as low
17 as 5 copies, and the limit of quantification (LOQ) was 40 transgenic haploid genome copies.
18 Three certified reference materials (CRMs) at known concentrations were analyzed as
19 unknown samples to verify the developed real-time PCR system. And no substantial bias
20 was shown with high accuracy. Thirty-five food products containing soybean, maize or
21 canola were collected from the markets as practical samples and further validated the
22 screening applicability of the built method. The results suggested that the method could be
23 reliably used for identification of GM events with *gat-tpinII* construct in plant-derived

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