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Poster Abstract - H.13

VIABILITY OF DNA TEMPLATE FROM PROCESSED TOMATO FOR THE IDENTIFICATION OF GENETICALLY MODIFIED DNA TRAITS AND SUBSEQUENT DEVELOPMENT OF A MULTIPLEX PCR SYSTEM

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According to current European legislation, processed food products containing greater than 0.9% w/w genetically modified derived ingredients must be labelled as GMO. It is therefore important that a system be developed to identify and quantify GMO products as well as understand the limits of such assays.

In the present work the limits in detecting DNA from genetically modified organisms was investigated using genetically modified tomato, transformed with the SGP-CP gene derived from cucumber mosaic virus (patent number: US5959181, inventor: Cellini F. and Grieco P.D.). Commercial tomato crops undergo various industrial treatments, both thermal and chemical, which increase the stability of the final foodstuff product but make it very difficult to obtain good quality template DNA for amplification. In fact available techniques used to detect transgenes via PCR are not reliable or repeatable when DNA is prepared the final processed product.

The aim of this work was to establish the limits to detecting the transgene after tomato processing. To determine this limit the food matrix was subjected to thermal treatment at different temperatures (60, 110, and 120°C) for different periods of time (3, 10, 20, 30, 60, and 120 minutes). DNA from the resulting food products was then extracted and subjected to PCR.

The results show that only DNA extracted from material treated to temperatures or 120°C for 30 minutes contained viable target template for amplification. This demonstrates that the temperature as well as time of incubation greatly influences the recovery of good quality template DNA.

In addition a multiplex PCR was developed for processed tomato sauce prepared from GM fruit which allows the simultaneous identification of the transgene and internal controls. The three target genes for amplification were: 1) a chloroplast specific DNA trait; 2) an endogenous tomato specific gene (PDOLL); 3) the 35S CaMV promoter specific for transgenes.