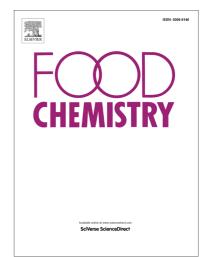
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Thermal and spectroscopic studies of the antioxidant food additive propyl gallate

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ACCEPTED MANUSCRIPT

1	Thermal and spectroscopic studies of the antioxidant food additive propyl gallate
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8	
9 10	Abstract
11	Literature mentions propyl gallate (PG) as a non-toxic synthetic antioxidant that can be
12	used as a food additive due to its high tolerance to heat. It is important to understand the
13	thermal properties and to identify the decomposition products of this substance, since it
14	has been reported to be thermally stable at temperatures as high as 300 °C.
15	Simultaneous thermogravimetry-differential thermal analysis (TG-DTA), differential
16	scanning calorimetry-photovisual (DSC-photovisual), coupled thermogravimetry-
17	infrared spectroscopy (TG-FTIR) analyses and spectroscopic techniques were used to
18	study the food additive PG. The TG-DTA curves, which were performed with the aid of
19	DSC-photovisual, provided information concerning the thermal stability and
20	decomposition profiles of the compound. From the TG-FTIR coupled techniques, it was
21	possible to identify n-propanol as a possible volatile compound released during the
22	thermal decomposition of the antioxidant. A complete spectroscopic characterization in
23	the ultraviolet, visible, near and middle infrared regions was performed in order to
24	understand the spectroscopic properties of PG.
25	
26	Keywords: Propyl gallate, Thermal behaviour, Spectroscopic studies, Coupled TG-

- 27 FTIR, DSC-photovisual
- 28

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