FOOD navigator.com

Breaking News on Food & Beverage Development - Europe

New test to detect colour adulteration of olives

By Nathan Gray, 03-Oct-2011

Related topics: Flavours and colours, Food safety and labelling, Science & Nutrition, Natural and clean label

Researchers from the Spanish Council for Scientific Research (*CSIC*) have proposed a new procedure for the detection of illegal colour additives in green olives.

Writing in the academic journal *LWT - Food Science and Technology*, the Spanish researchers noted that because certain processing techniques alter the colour of olives, certain manufacturers add a food colorant during the processing of green olives – *"with the aim to conceal such colour change and to obtain a green permanent colour in the final product."*

However, the authors noted that European Union regulations do not permit the addition of colorants to table olives, or olive oil.

"The present work proposes a procedure for the detection of the colour adulteration of green table olives with E-141ii colorant," said the researchers, led by María Roca from CSIC.

They added that the fraudulent addition of E-141ii is determined by analysing solutions of the food or packaging to test for of peaks identified as copper chlorophyllin complexes – which are compounds completely foreign to the natural pigment profile of green olives.

Colourants

The researchers noted that among the green food colorants, E-141ii – known to contain copper complexes of chlorophyllins – is the most used in food technologies due to its hydrophilic character and its high green colour stability.

"Therefore this is the colorant most capable of being fraudulently used to reinforce the green colour in olives," they said.

However they added that because the starting materials and manufacturing technologies used to prepare E-141ii are varied, end product may exhibit different compositions.

"Addition of this colorant to table olives to obtain a green permanent colour in the product is a fraudulent practice, because the FDA allows its use only in citrus-based dry beverage mixes and European Union regulations do not permit the addition of colorants to table olives," said Roca and her colleagues.

They added that whilst there is an existing analytical method for the determination of E-141i and E-141ii colorants in foodstuffs in which they are permitted, food samples containing significant amounts of emulsifiers, gelatine or fats are problematic for analysis.

"The high lipid content of the olive fruit, as well as the complex pigment composition of green table olives treated with alkaline solution, require a specific methodology for their pigment analysis," explained Roca and her team.

Adulteration analysis

The researchers explained that the analysis method consists of pigment extraction in liquid phase and subsequent analysis by high-performance liquid chromatography with diode-array detection.

"With the proposed analytical methodology, the simple detection (within the first 12 minutes of chromatographic separation) of peaks with spectroscopic characteristics identical to those of copper chlorin-type compounds (components of the E-141ii colorant) provides proof that the colour of table olives has been reinforced with E-141ii colorant," said Roca and her co-workers.

They noted that whilst the methodology has been developed for complex food matrices with high lipid content and complex pigment composition, its uses could be wider, since it can also be applied to the analysis of other more simple food matrices.

Source: *LWT - Food Science and Technology*
Published online ahead of print, doi: 10.1016/j.lwt.2011.09.012
"Detection of the colour adulteration of green table olive with copper chlorophyllin complexes (E-141ii colorant)"
Authors: B. Gandul-Rojas, M. Roca, L. Gallardo-Guerrero