

DETERMINATION OF SUDAN I AND ITS ANALOGUES IN FOOD

Key words:

Phenylazo dyes, Carcinogenic substances, Fast reversed phase chromatography, Spectral library match.

Introduction:

Sudan I is the common name given to 1-phenylazo-2-naphthol, a fat-soluble dye used industrially to colour oils, waxes, greases, varnishes etc. It has been recognised by health authorities as being potentially carcinogenic, and is banned as a food additive in the UK and across the European Union.

The discovery of Sudan I in a batch of Worcester sauce recently caused a food scare in the UK that forced manufacturers and retailers to withdraw vast amounts of products from the shelves.

Although Sudan I had hit the headlines, its analogues, Sudan II, Sudan III and Sudan IV also needed to be tested for. An HPLC (UV/Vis detection) method to analyse the four analogues in food samples has been developed. In a single chromatogram, Sudan I, Sudan II, Sudan III and Sudan IV are all eluted within three minutes. The LOD for this method was found to be 0.1 ppm.

Analysis:

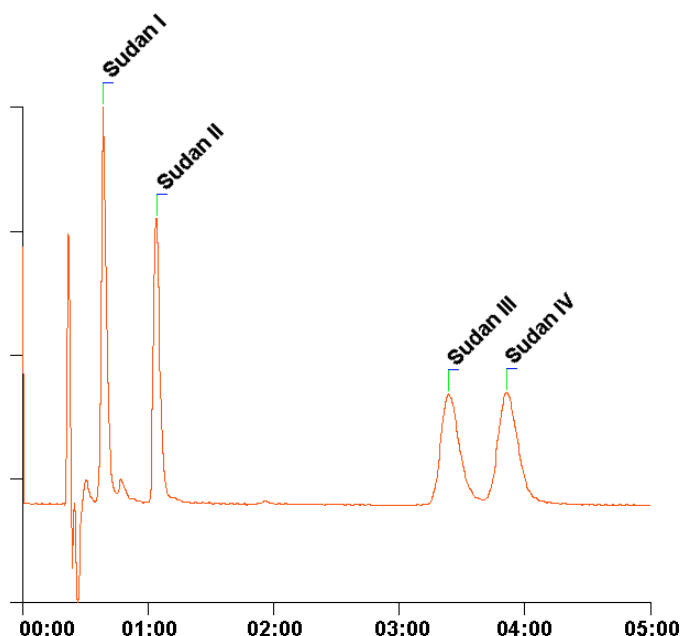
Method:

5g of homogenised sample were accurately weighed into an amber round bottomed flask. 50ml of methanol were added. The mixture was shaken vigorously by hand for 1 minute. A 50ml aliquot of the extract was centrifuged at 3000rpm for 1 minute. 2ml of the supernatant were filtered through a 0.45µm Teflon filter. The filtrate was collected for analysis by HPLC.

Instrumentation:

Adept HPLC Series Binary System 6S with on-line Solvent Degasser, Column Oven and "WaveQuest" UV-Vis ultra-fast scanning detector. Spectral scanning was used to create a spectrum library for peak identification.

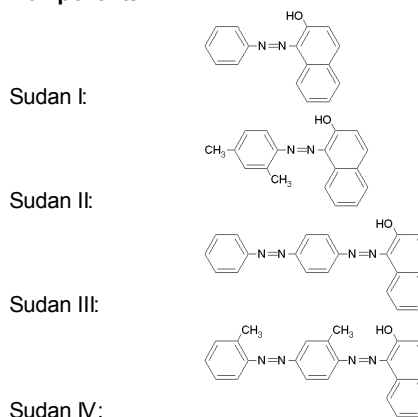
Chromatography:



Chromatographic conditions:

Mobile phase: 50% acetonitrile, 50% methanol, isocratic
Column: Supelcosil LC-PAH 3 µm 50 x 4.6 mm
Temperature: 35 °C
Flow rate: 1.75 mL/min
Injection: 20 µL
Detection: 504 nm

Components:



Ordering Information:

Basic instrument:



Adept HPLC Series System 6S
with:
CE 4661 Column Oven,
CE 4300 "WaveQuest" scanning
UV-Vis detector
CE 4900 Chromatography System
Manager
PowerStream Chromatography
System Manager Software.

Optional components:



CE 4020 Solvent Degasser



CE 4800 Autosampler.

We supply analytical columns and guard column kits on request.