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ISOTACHOPHORESIS

APPLICATION NOTE No. 33

FAST and SIMPLE ANALYSIS of NITRATE and NITRITE in MEAT PRODUCTS

MAIN FEATURES:

Nitrates and nitrites are added to the meat products from several reasons. Nitrates are converted to nitrites, that can cause at higher concentrations health problems. Due to above mentioned reasons it is necessary to check the concentration level of both additives. Regulatory limits for nitrate are 150 - 500 mg/kg (depends on the country and product) and 60 – 200 mg/kg for nitrite.

Isotachophoresis is very efficient and fast method for analysis both substances in drinking and surface waters (see Application note No.1). But there is a problem in meat products due to high content of chlorides that are added to products in concentration ratio 1: 200 to both additives. Simple sample pretreatment removes chlorides and allow fast analysis of both components by two column ITP analyser with UV detector. Sulphate must be added to the sample as spacer to separate both species.

Sample pretreatment: dilute 2.5 g of the sample in 25 ml of water, 15 min. extraction in ultrasonic bath, filtrate, take 0.5 ml of filtrated sample add 0.5 ml of 1% silver acetate (to remove chloride and acetate migrates behind formate used as a terminating ion). After centrifugation inject 5 μ l to the analyser

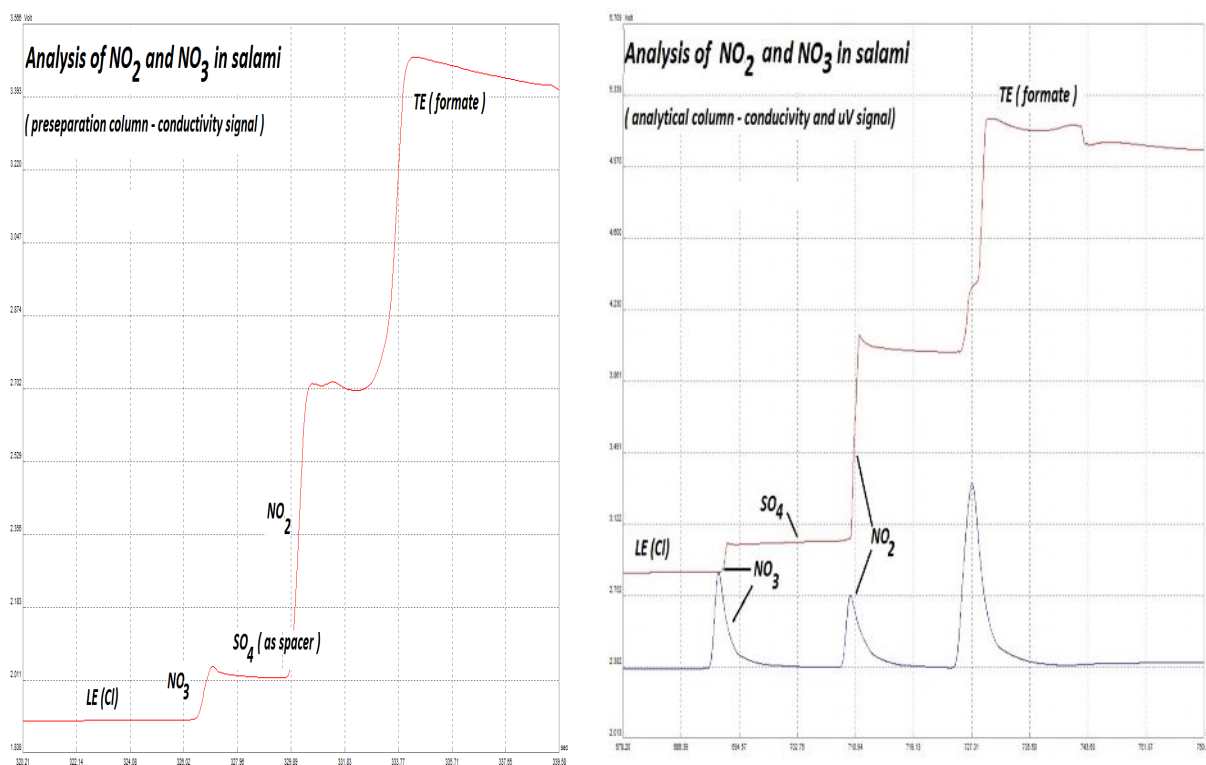


Fig. 1: Record of salami sample from pre-separation and analytical columns

Conditions : leading electrolyte (LE): 8 mM HCl + BisTris Propán + alanín + 0,1%MHEC
terminating electrolyte (TE): 5 mM formic acid +5 mM alanine
V =5 μ l, I = 300 /60 μ A, UV – 220 nm

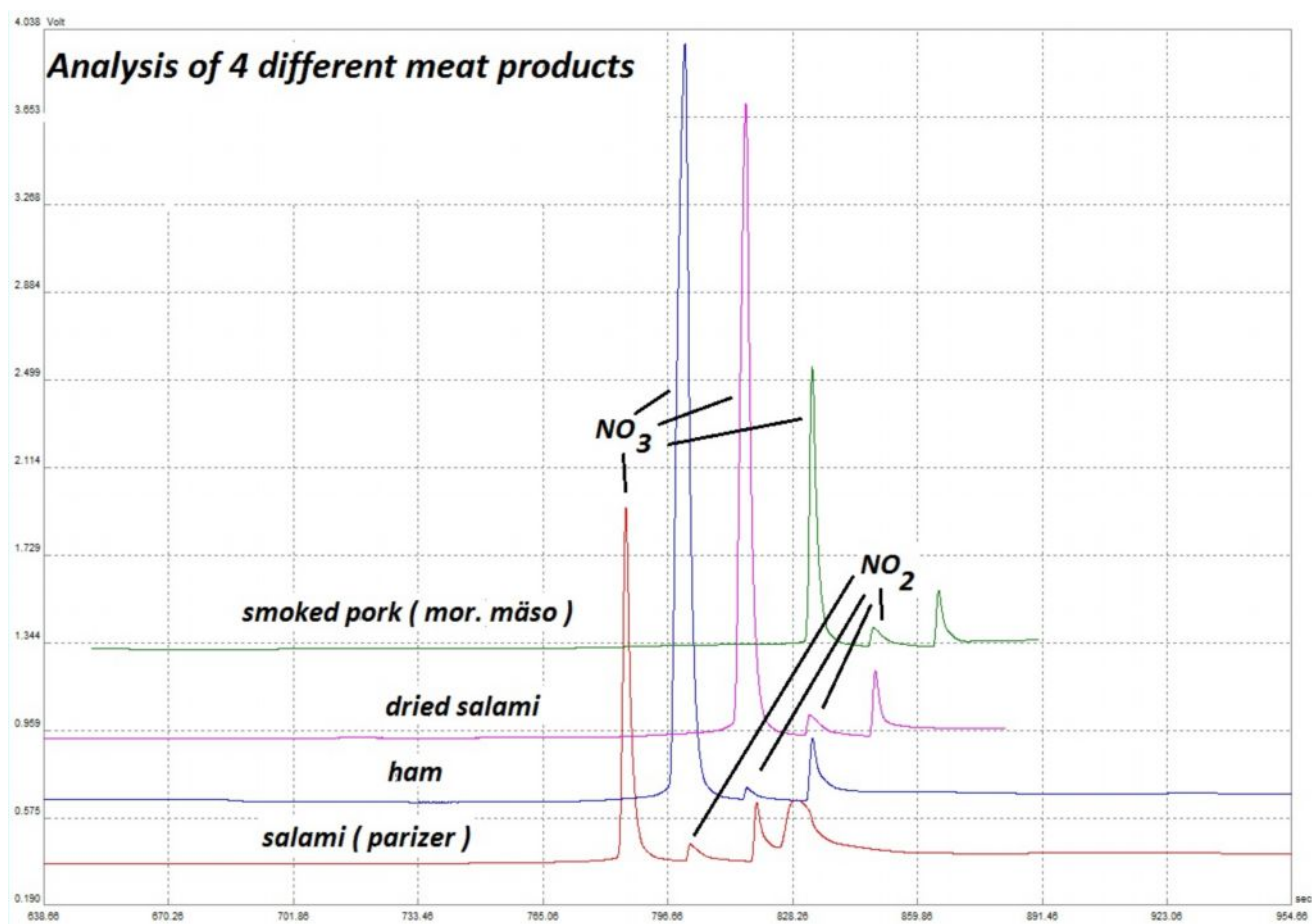


Fig. 2 : Analysis of nitrate and nitrite in 4 different products.
Conditions the same as Fig.1.

CZE and ITP analysers are produced by :
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