



Analysis of Biogenic Amines

Food and Physiological Samples

Histamine and other polyamines such as Putrescine, Cadaverine, Spermidine and Spermine are products of decomposition. The level of histamine, in particular, has been used as a regulatory guideline for degree of decomposition in fish. Also, Histamine and Tyramine levels are of interest to producers of wine and cheese.

The polyamines, Spermidine, Spermine and Putrescine are elevated in neoplastic and damaged, e.g., burned, tissue. In fact, the level of circulating and urinary polyamines is an indicator of total body damage. The levels can be monitored for the effect of diet and other modalities on recovery.

This method employs ion-exchange chromatography so, after extraction, centrifugation/filtration are the only sample preparations necessary.

EXTRACTION PROCEDURE

Weigh 10 g of sample into a small glass blender cup (any fortifications should be added at this time). Add 50 mL of extraction solution, Catalog No. 1700-1119, and homogenize for two minutes. Centrifuge for five minutes. Mix equal portions of the supernatant with the mobile phase (K600). Allow to coagulate at -4 °C for 15 minutes, then centrifuge for 5 minutes. The clear supernatant is filtered (0.45 µm Nylon) and placed in an autosampler vial.

METHOD

Analytical Conditions

COLUMN: ALKION™ cation-exchange, K⁺ form,
4 x 150 mm, Catalog No. 9410917
ALKION™ Guard column, 3 x 20 mm,
Catalog No. 9493020

TEMPERATURE: 40 °C

FLOW RATE: 0.8 mL/min

MOBILE PHASE: K600, K563, K130

Post-column Conditions

POST-COLUMN SYSTEM: PCX5200

REACTOR VOLUME: 0.15 mL

TEMPERATURE: 45 °C

REAGENT: 300 mg of OPA, 2 g of Thiofluor™,
3 mL of 30% Brij® 35 in 950 mL of OD104

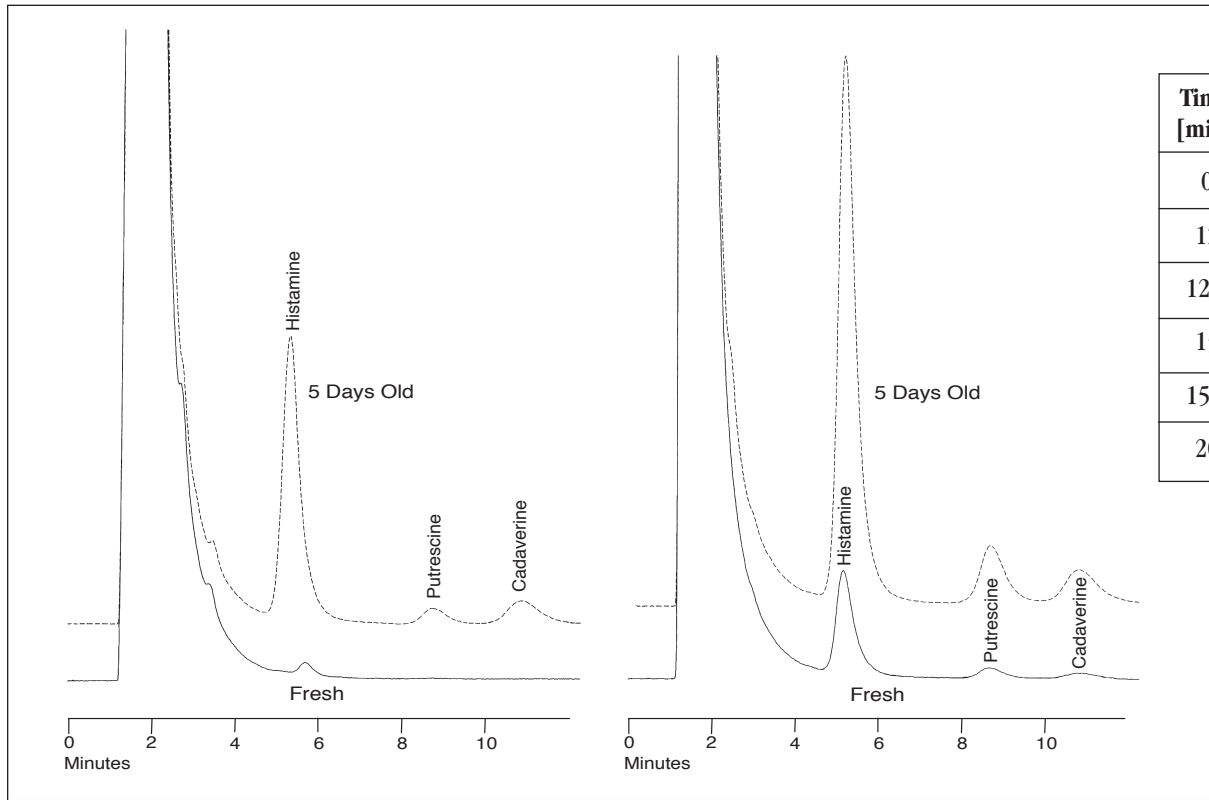
FLOW RATE: 0.3 mL/min

DETECTION: Fluorometer

λ_{ex}: 330 nm

λ_{em}: 465 nm

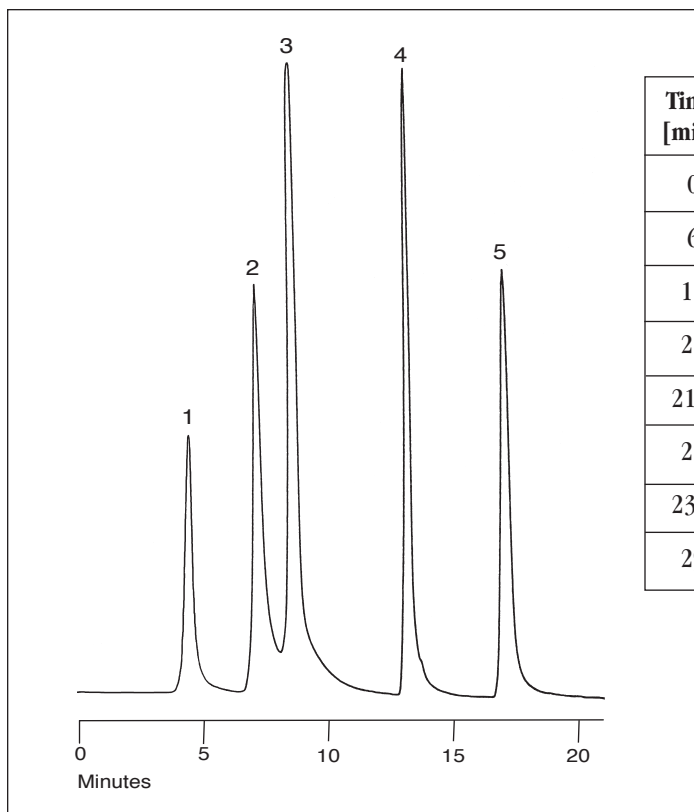
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Time [min]	K600 [%]	K130 [%]
0	100	0
12	100	0
12.1	0	100
15	0	100
15.1	100	0
20	100	0

Mahi-Mahi

Ahi Tuna Fillet



Time [min]	K600 [%]	K563 [%]	K130 [%]
0	100	0	0
6	100	0	0
15	0	100	0
21	0	100	0
21.1	0	0	100
23	0	0	100
23.1	100	0	0
29	100	0	0

- 1 Histamine
- 2 Putrescine
- 3 Cadaverine
- 4 Spermidine
- 5 Spermine

Gradient Separation of Polyamine Mixture