

Analysis of Imidazole Dipeptides in Meat

Imidazole dipeptides are substances present in the meat of domestic poultry, livestock, and fish and shellfish, and typical examples include anserine (β -alanyl-N-methylhistidine), carnosine (β -alanylhistidine), and balenine (β -alanyl-3-methylhistidine). In the body imidazole dipeptides are believed to have a variety of physiological benefits such as antioxidant effects, pH buffering action, and stimulatory action on tissue repair, and they are increasingly used as functional food ingredients.

HPLC methods using ion exchange or a reversed phase column with an ion pair reagent have been reported for the analysis of imidazole dipeptides in food. In this application we show the analysis of anserine and carnosine using an amino column in the HILIC mode. A sample of chicken breast meat was extracted under acidic conditions, filtered, diluted, and analyzed. Our results showed that 100g of meat contained 840mg anserine and 120mg carnosine.

Figure 1. Structures of two imidazole dipeptides

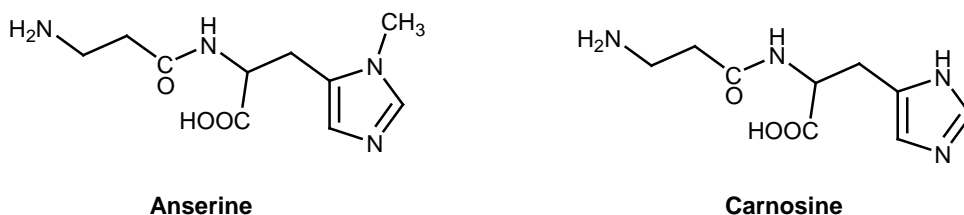


Figure 2. Chromatogram of standard sample (0.05g/L)

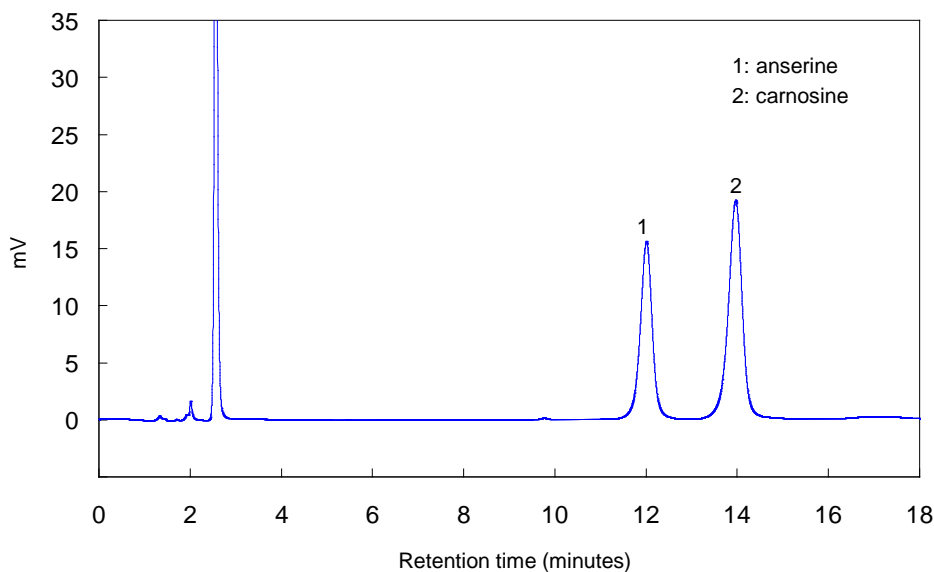


Table 1. Analytical conditions

Column:	TSKgel NH ₂ -100, 3µm, 4.6mm ID x 15cm
Mobile phase:	100mmol/L sodium dihydrogen phosphate, pH 4.5 / acetonitrile = 45 / 55
Flow rate:	1.0mL/min
Detection:	UV@210nm
Temperature:	40°C
Injection vol.:	5µL

Figure 3. Pretreatment of chicken meat

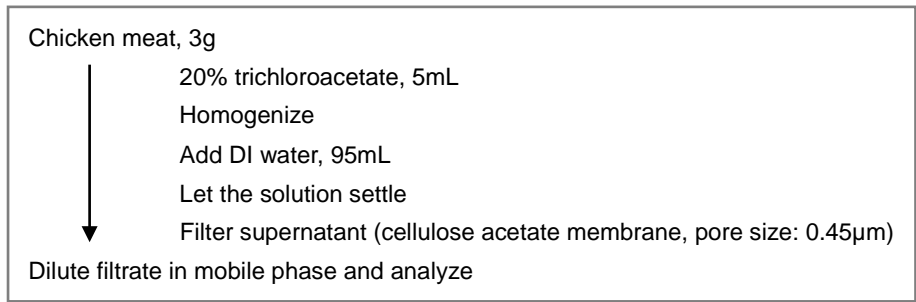


Figure 4. Calibration curves of imidazole peptides

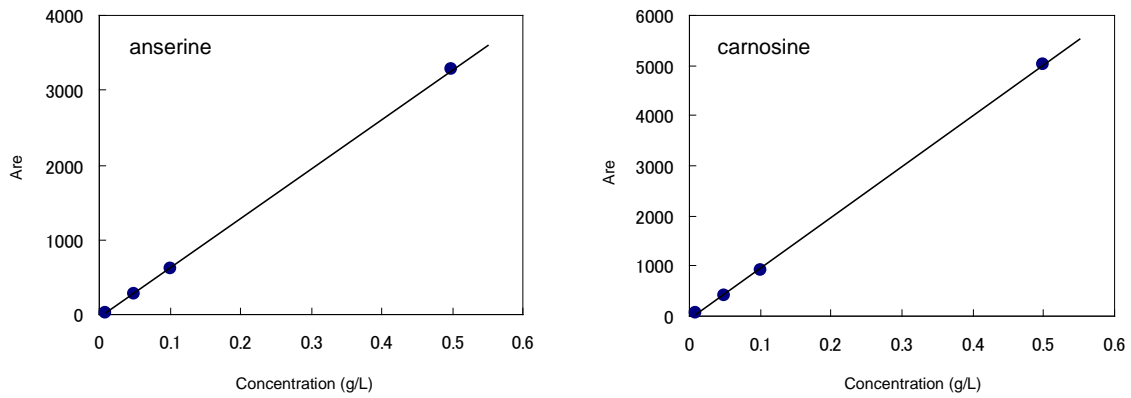
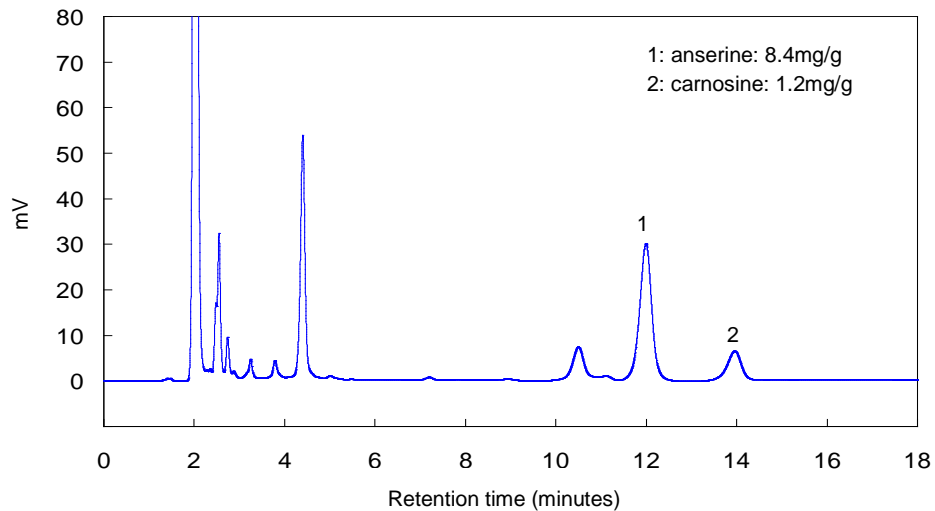


Figure 5. Chromatogram of chicken meat extract





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