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Simultaneous Determination of Copper, Zinc and Selenium in Chicken Liver by Differential Pulse Polarography

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Abstract: A differential pulse polarographic method for the determination of copper, zinc and selenium in chicken liver is described. It was possible to determine these elements in a single sample solution after acid digestion. Dried liver samples weighing about 3 g were digested using HNO₃ and HClO₄ acids.

Britton-Robinson or acetate buffer has been found suitable as the supporting electrolyte. For the determination of selenium, the hydrogen catalytic peak was used after the addition of molybdenum(VI) to the buffer solution at about pH 3. Then the pH of the same solution was increased to 4 and zinc was determined. For the determination of copper, EDTA was added and it was determined from its peak at --0.24 V. The trace element quantities for four different dry liver samples were 15-30 mg/g for copper, 2.2-3.6 mg/g for selenium and 0.4-0.9 mg/g for zinc. The validity of the method has been demonstrated using a synthetic sample resembling the liver in composition; consistency was shown for the quantity of zinc using AAS.

Key Words: Chicken liver, determination, copper, selenium, zinc, differential pulse polarography

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