Fast Determination of Ultra Trace Amounts of Residual Proteins in Penicillin based on the Enhancement in Rayleigh Light Scattering Spectra of Phenylfluorone-Mo(VI) Complex

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Determination of protein – phenylfluorone (PF)-Mo(VI) complex using Rayleigh light scattering (RLS) method in the presence of the OP emulsifier microemulsion has been performed. At pH = 2.72, the RLS spectrum of PF-Mo(VI) complex is enhanced in the presence of proteins. Such a behaviour was utilised in a new method for the quantitative determination of proteins. An OP emulsifier microemulsion was used in this determination to increase the sensitivity. Four proteins, including bovine serum albumin (BSA), human serum albumin (HSA), Lysozyme (Lys), and γ-globulin (γ–G) have been determined. The dynamic range for BSA was 0–80 ng mL⁻¹ and the corresponding detection limit equalled 1.57 ng mL⁻¹. The method is characterised by high sensitivity and simplicity, and provides results of satisfactory stability. It can be used for the determination of residual protein in penicillin samples. The relative standard deviations for the investigated proteins were less than 4.48%, and the recoveries were in the range of 96.35%–100.9%.

Przeprowadzono oznaczanie kompleksu białko-fenylofluoren (PF)-Mo(VI) stosując metodę rezonansowego rozproszenia światła (RLS) w obecności emulgatora OP. W obecności białek, przy pH 2.72, widmo RLS kompleksu PF-Mo(VI) ulega wzmożeniu. Właściwość tę wykorzystano w nowej metodzie ilościowego oznaczania białek. Dodanie emulgatora OP znacznie poprawiało czułość. Oznaczono w ten sposób cztery białka: albuminę wołową (BSA), albuminę ludzką (HSA), lizozym (Lys) i γ-globulinę. Zakres dynamiczny BSA...