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Simple, Rapid, Turbidometric Determination of Inorganic Sulfate and/or Protein

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A simple, reproducible, turbidometric assay, adaptable to protein and inorganic sulfate analysis is described. A linear relationship between optical density and concentration is found for sulfate between 0 and 80 μg and protein between 25 and 2500 μg. Maximal turbidity develops over a relatively short time and is stable for some time (over an hour for sulfate analysis). Many compounds which interfere with other assays have no effect on this system.

Virtually all methods for determination of inorganic sulfate in hydrolysates of biological materials depend upon barium sulfate formation. This compound or the original barium partner are subsequently determined. Many of these methods are tedious and time-consuming, involve unstable reagents, or suffer interference from common compounds. Turbidometric methods remain the simplest and most rapid methods. Various reagents such as gelatin (1,2), agar (3,4), and agarose (5,6) have been employed as mechanical support agents in precipitation analysis. Dodgson's gelatin reagent (1,2) for sulfate analysis requires great care in preparation and is relatively unstable (1). This report presents a modification of Dodgson's method which overcomes these problems. In the absence of $BaCl_2$ the method provides a rapid, simple assay for many compounds which interfere with other methods. The two assays may be used in combination to assay both sulfate and protein.