

Critical Evaluation of Combustion Method for the Measurement of ^{35}S in Biological Specimens with Liquid Scintillation Counter

M. TAKAMATSU

Radioisotope Laboratory

K. YASHIMA and K. OKUDA

Second Department of Medicine, Kurume University School of Medicine, Kurume

Measurement of soft beta-emitters in biological materials has been hampered because of the insolubility of tissue fluid in scintillators, quenching, and the limitation in the amount of tissue applicable to the scintillator. Therefore, combustion of tissue is the only feasible way of putting sufficient counts in the scintillator in many circumstances. In contrast to the well-established techniques for ^{14}C and ^3H , the combustion method for ^{35}S containing materials has not yet been worked out to the satisfaction of laboratory investigators. This study aimed at establishing the conditions for solubilizing ^{35}S in biological materials into ethanolamine after combustion.

Using ^{35}S -thiamine-HCl in solutions, and

mixed in tissue homogenates or applied on filter paper, the recovery was measured in relation to such conditions are quality of methanolamine amount of scintillator, amount of solid, time for absorption, method of drying, etc. It was found the recovery following combustion and absorption in ethanolamine was in a linear correlation with the amount applied to paper or tissue. The recovery was more than 80% from liver homogenate. Although recoveries vary to some extent with the kind of material, if its coefficient is worked out, first the combustion may be of practical value in the measurement of ^{35}S in biological specimens.