

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

Upton, L. I., New York

DATE: April 6, 1951

REPOSITORY Records Holding Area Bldg 494 BNL Committee on Use of Radioactive
ISOTOPE: Isotopes in Human Subjects
COLLECTION Protocols - Clinical FROM: F. Marott Sinex F. Marott Sinex
BOX No. 4 SUBJECT: Project H-18: Request for permission
FOLDER Human Protocols 1957-1963 to administer S^{35} -labeled methionine
to children.

We propose to administer sulfur- 35 labeled methionine to children in order to investigate the abnormal protein and amino acid metabolism found in nephrotic syndrome. Sulfur- 35 is a low energy beta emitter (mean energy, 0.055 MEV) with a half-life of 87.1 days. It is estimated that a dose of 1.33 microcuries per kilogram will be sufficient for an experiment, and that under no conditions would a dose greater than 10 microcuries per kilo be administered. A dose of 1.33 microcuries per kilogram of S^{35} is equivalent to .0044 rep. on the first day, or 0.516 rep. total. A dose of 10 microcuries per kilo of S^{35} is equivalent to 0.033 rep. on the first day or 4.21 rep. total. These calculations were made on the basis of a uniform distribution of the methionine throughout the tissue mass. The initial concentration of the methionine is proportional to the rate of protein synthesis by the various tissues.¹ There should be no excessive local concentrations.

Since the S^{35} will be continuously excreted, the actual radiation which the children will receive will be considerably less than that indicated by the above figures. Data on the excretion of S^{35} administered as DL-methionine to humans may be found in the paper of Kinsell et al.² DL-methionine labeled with S^{35} has been given to children in a previous study of nephrotic syndrome by Kelly et al.³ The study which we are planning will be more extensive than that of these workers. It will be preceded and accompanied by a series of experiments on dogs in which we will investigate certain fundamental aspects of protein and amino acid metabolism and attempt to refine some of the techniques involved in the manipulation of S^{35} .

1. Tarver, H. and Schmidt, C.L.A., J. Biol. Chem., 146, 69 (1942)
2. Kinsell, L.W., Margen, S., Tarver, H., Frantz, J.M., Flanagan, E.K., Hutchin, E., Michaels, G.D., and McCallie, D.P., J. Clin. Invest., 29, 238 (1950)
3. Kelly, V.C., Ziegler, M.R., Dodson, D., and McQuarrie, I., Proc. Soc. Exp. Biol. Med., 75, 153 (1950).

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