

## A Study of the Stability of Chromium-51 Labeled Serum Albumin<sup>1</sup>

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The stability of chromium-51 labeled serum albumin has been studied making use of both chromatographic and dialysis analytical procedures. This chromium-51 labeled compound is now being used as an indicator of loss of protein into the gastrointestinal tract (1).

This study demonstrate the good stability of chromium-51 labeled serum albumin under the conditions of the experiment.

### EXPERIMENTAL PROCEDURES AND RESULTS

The chromium-51 labeled serum albumin was prepared according the procedure of Waldmann (1). The initial specific activity was 15 mc per gram.

After the preparation the chromium-51 labeled serum albumin was assayed for unbounded chromium at 1 day, 7 days, 15 days and 30 days. This analysis was performed by dialysis against distilled water.

0.2 ml of solution of chromium-51 labeled serum albumin was dialyzed against 500 ml of distilled water. The distilled water was changed every 8 hours during 24 hours and the temperature was kept at 4°C (in the refrigerator). An aliquot of each portion was counted with a scintillation counter. The water showed no activity after 3 changes.

Simultaneously a sample of chromium-51 labeled serum albumin was assayed using ascending paper chromatography with paper S & S 2043b. Among the solvents used, the most practical and one that had little effect on the chromium-albumin bond was n-propanol: 0.1 M phosphate buffer pH 7.2 (3:2). With this solvent the R<sub>f</sub>s obtained were: Chromic (Cr<sup>+++</sup>) 0.80-0.86, chromate (CrO<sub>4</sub><sup>--</sup>) 0.64-0.69 and chromium serum albumin 0.00-0.02.

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The chromatogram was scanned and the activity graphically recorded. By graphic integration of these records were obtained the values of chromium-51 labeled albumin and of free-chromium. This free-chromium was found as  $\text{Cr}^{+++}$ .

The activity of free-chromium was very low even after 30 days of storage at 4°C. and in sterile conditions. The results obtained are shown in the following table.

TABLE I

<i>Method</i>	<i>1 day</i>	<i>7 days</i>	<i>15 days</i>	<i>30 days</i>
Dialysis	0.048%	0.40%	0.68%	0.91%
Chromatography	0.09 %	0.45%	0.72%	1.20%

## DISCUSSION

The chromium-51 labeled serum albumin is very stable. The values are similar to those obtained by Gray and Sterling (2) but in this study the specific activity was approximately 500 times higher than that used by Gray and Sterling.

The chromatographic method used seems to be as useful as the dialysis for the analysis of chromium-51 labeled serum albumin.

## REFERENCES

1. WALDMANN, T. A.: *The Lancet*, July 15, pp. 121-123 (1961).
2. GRAY, S. J., AND STERLING, K.: *J. Clin. Invest.* 29:1604, 1950.

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