

1. A primed intermittent oral dose and a primed continuous intravenous infusion of ^{15}N -alanine was administered to healthy males to determine the rates of protein turnover, synthesis and breakdown. The subjects were fed an adequate intake throughout the day. Urine and blood samples were collected.
2. Mean rate of protein flux as measured by the enrichment of urinary ammonia and urea were found to be $2.25 \pm .21$ and $3.00 \pm .42$ g. protein/kg./day respectively during the oral administration. The values obtained from the intravenous study were 1.87 g. protein/kg./day with ammonia and 4.57 g. protein/kg./day with urea. When each end product and the respective technique was considered the mean rate obtained using ^{15}N -alanine was lower than that reported using ^{15}N -glycine. However, the rank order of the values for the different methods was similar to those with ^{15}N -glycine.
3. Mean plasma alanine flux after the oral and intravenous studies were 548 ± 128 and $281 \mu\text{mol/kg./hr.}$ respectively. Red cells alanine flux was different and higher than plasma flux in each study.
4. During the studies a considerable amount of label was transferred to urinary ammonia and urea while glutamate and alanine had low enrichments.
5. In the fed state, after the oral dose, denovo alanine synthesis was calculated to be $457.4 \mu\text{mol/kg./hr.}$ This accounted for eighty-three percent of plasma alanine flux, thus seventeen percent of alanine moving through the venous plasma compartment

originated from preformed alanine.

6. Up to sixteen to twenty-two percent of urinary ammonia was derived from alanine.