

**BLOOD PLASMA L-ASCORBIC ACID CONCENTRATION FOR ORAL L-ASCORBIC ACID DOSAGE UP TO 12 GRAMS PER DAY**

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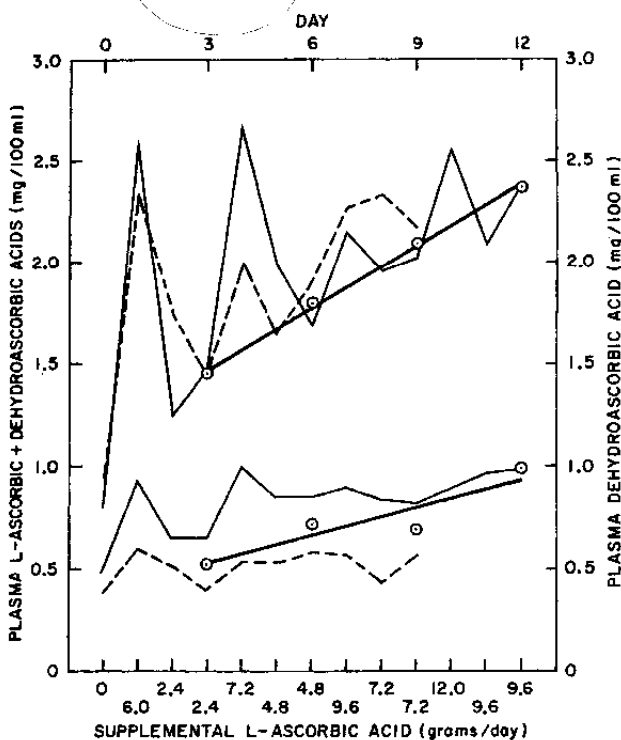
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Three independent lines of reasoning have led to the suggestion (1) that 1 to 10 grams of L-ascorbic acid per day is the oral dosage range consistent with optimum health for most people. One of these lines of reasoning is based on evolution (2), one on L-ascorbic acid synthesis by animals (3), and one on common cold therapy experiments (1). It would be expected that an increase in oral L-ascorbic acid dosage would result in increased blood plasma concentrations of L-ascorbic and dehydroascorbic acids. We have measured these increased blood plasma concentrations in two young male subjects.



Subject 1 was 21 years of age and had been receiving no vitamin supplement to his diet, Subject 2 was 23 years of age and had been receiving a multivitamin pill daily which was terminated one week before the beginning of the experiment. Dosages of 0.1, 0.2, 0.3, 0.4, and 0.5 grams per hour were given to achieve daily dosages of 2.4, 4.8, 7.2, 9.6, and 12.0 grams per day respectively. During the first night, no L-ascorbic acid was given. Thereafter, the dose for the entire 8-hour sleep period was given immediately before sleep. Blood was drawn at 3.00 p.m. each day and the plasma was separated and assayed (4, 5) for L-ascorbic and dehydroascorbic acids. Figure 1 shows the results of these assays. The solid line is for subject 1 and the broken line is for subject 2. The upper curves are for the sum of L-ascorbic and dehydroascorbic acids and the lower curves are for dehydroascorbic acid alone.

The hourly dosages were arranged to allow maximum equilibration at 2.4, 4.8, 7.2 and 9.6 grams per day dosage within the 12-day experimental period. The circled values in figure 1 are the average plasma levels for the two subjects on the last days of these equilibration periods. The single value for subject 1 is used for day 12, since the experiment was not

completed for subject 2 after day 9. The heavy solid line is a least-squares straight line fitted to the circled values.

There is a regular increase in plasma L-ascorbic and dehydroascorbic acids with increased oral dosages in the 1 to 10 gram per day range. The plasma level is approximately doubled by a 10-fold increase in oral dosage. The size of this increase is probably diminished by a concomitant increase in the metabolic utilization of L-ascorbic and dehydroascorbic acids. The initial rises in plasma levels on days 1 and 4 to values above the equilibration levels on the same dosages are also suggestive of increased metabolic utilization.

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