

MEDICINAL CHEMISTRY 402

VITAMINS and Minerals

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I. INTRODUCTION

A. Market size and importance

B. Pharmacist role

C. Definition

E. Standardization

Units of biological activity now replaced by potencies based on weight of most active vitamin.

F. Requirements

1. DV (Daily Value) -- set by FDA and primarily used for labeling purposes (% DV).
 - a. See lecture 1 supplementary tables
2. Dietary Reference Intakes -- set by Food & Nutrition Board, National Academy of Sciences
 - a) Estimated Average Requirement (EAR).
 - b) RDA -- Where requirements are precisely known, RDA is set plus two standard deviations from average requirement for the population.
 - c) Tolerable Upper Limit (UL) -- maximum level unlikely to cause harm

G. Function

- a) Vitamins are part of the coenzyme that the body cannot synthesize, e.g. nicotinic acid is a vitamin and NADP is the coenzyme.
- b) In some cases there is no coenzyme form of the vitamin. The vitamin is active without further transformation *in vivo*, e.g. Vitamin C, E, A, K.

H. Intestinal Synthesis and Significance -- (fat soluble and water soluble vitamins)

No	Yes, but not absorbed	Yes
C	thiamin	B ₆
A	riboflavin	K
D	niacin	biotin
E	B ₁₂	pantothenic acid
folic acid		

Low intake plus antibiotic therapy or prolonged TPN can lead to deficiencies.