"Unimportant" Molecules?—Part 1

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Abstract

About a century ago when research into the nutritional components of food began, scientists were limited by the technology and physiological understanding of the time. Nonetheless, this pioneering research revealed the importance of many nutrients for the maintenance of life and prevention of overt deficiency diseases. Unfortunately, the necessary simplifications led to the unrecognized assumption that the constituents in food not required for life were not important. This justified growing food chemically rather than organically because essential nutrients were largely (but not entirely) conserved. However, as technology advanced—especially at the turn of this century—much was revealed. Nutrients considered single molecules when discovered were now realized to represent multiple variants and vitamers with significantly different physiological effects, and many of the molecules considered "unimportant" have huge impacts on health and resistance to disease.

History of Nutrition Research

About 100 years ago when the scientific community was diligently working to determine the components of foods necessary for life, they were limited by the technology of the time and the early stages of our understanding of physiology. Since so little was known, they had little to guide them. Nonetheless, a lot was discovered. The term "vitamine" was coined in 1912 by Polish scientist Casimir Funk to designate a group of compounds discovered to be **vital for life**.[1] Considering the limitations of the time, the researchers focused on food components required for life in the animals used or whose need was determined by serious human deficiency diseases. They also had to focus on the main biochemical pathways since these were the only ones measurable with the available technology. As the research evolved over the first few decades of the last century, a number of vitamins (Table 1), minerals, amino acids, and fatty acids were determined to be necessary for life. The total number of essential nutrients (depending upon criteria used) ended up at about 42 with a few more under consideration (Table 2). This pioneering research was a huge advance for the prevention of death and disease from serious deficiencies.

Table 1. Year of Discovery of Vitamins[2]

Year of discovery	Vitamin
1910	Vitamin B1 (Thiamine)
1913	Vitamin A (Retinol)
1920	Vitamin C (Ascorbic acid)
1920	Vitamin D (Calciferol)
1920	Vitamin B2 (Riboflavin)
1922	Vitamin E (Tocopherol)
1929	Vitamin K1 (Phylloquinone)
1931	Vitamin B5 (Pantothenic acid)
1934	Vitamin B6 (Pyridoxine)
1936	Vitamin B7 (Biotin)
1936	Vitamin B3 (Niacin)
1941	Vitamin B9 (Folic acid)
1948	Vitamin B12 (Cobalamin)