Para-Aminobenzoic Acid (Paba) Encyclopedia Article

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One of the most important functions of para-aminobenzoic acid (PABA) is to serve as a nutrient for the intestinal tract's numerous microorganisms. When necessary--because of deficiencies in the diet, for instance--PABA also increases the intestinal synthesis of other B vitamins, particularly of folic acid, of which it is a structural unit.

But PABA has another important distinction. In 1940, the year Richard Kuhn isolated PABA, Kuhn and other researchers soon learned that the new compound appeared to reverse the action of sulfanilamide, one of the early sulfa drugs. When the vitamin and the antibacterial were compared, the two proved to have strikingly similar structures. Surprised but intrigued, Kuhn (and others) speculated that the two compounds might somehow be in competition--a competition that, in this case, PABA was clearly winning.

To help them find answers, researchers began to synthesize compounds that were almost chemically identical to other vitamins. They quickly learned that some of these new synthetics appeared to act as antivitamins: when fed to animals, the synthetics caused a vitamin deficiency state that would, in many cases, be reversed by feeding the original vitamin. More importantly, the discovery of antivitamins made other beneficial advances possible. The synthesis of antivitamin K, for instance, led to the manufacture of dicumarol, an agent that helps prevent the formation of dangerous blood clots. The synthesis of anti-PABA compounds eventually produced sulfa drugs that could effectively treat bacterial infections in most cases, because they had the ability to successfully compete with PABA for positions in a coenzyme necessary for bacterial reproduction.