



PIC QUESTION OF THE WEEK: 9/24/07

Q: Please clarify the terminology related to the available dosage forms of nicotinic acid.

A: Nicotinic acid (niacin; vitamin B₃) is available as both a prescription medication (Niaspan) and over-the-counter (OTC) dietary supplement. It not only decreases low-density lipoprotein cholesterol (LDL-C) levels, but reduces serum triglycerides as well. Nicotinic acid also increases levels of high-density lipoprotein-cholesterol (HDL-C). Multiple mechanisms have been proposed for these effects including inhibition of hepatic lipoprotein synthesis, promotion of lipoprotein lipase activity, and reduction of free fatty acid mobilization from adipose tissue. Typical adverse effects consist of flushing and pruritus secondary to its vasodilatory activity as well as gastrointestinal upset and possible hyperglycemia. On rare occasion, nicotinic acid products have resulted in hepatotoxicity. Because of the frequent association of *immediate release* (often referred to as crystalline nicotinic acid) products with flushing, nicotinic acid has been formulated in a number of different dosage forms. These permit less frequent administration while reducing the incidence of flushing and pruritus. The terminology used to describe the multitude of nicotinic acid dosage forms is poorly defined and potentially quite confusing. Traditionally, *controlled-release* has been a general descriptive term for any dosage form that is not rapidly dissolved and absorbed. Both *extended-release* and *long-acting products* are considered *controlled-release* formulations; however, each has its own release profile resulting in different dissolution rates. *Extended-release* nicotinic acid products such as Niaspan possess a dissolution rate that ranges from 8-12 hours. Long-acting (also referred to as sustained-release or timed-release) preparations may supply drug for 12 or more hours. These various release characteristics can result in different adverse effects. Flushing and pruritis are common with immediate-release products while the risk of hepatotoxicity increases with long-acting formulations. The metabolism of nicotinic acid dosage forms is variable and may be responsible for some of their adverse effects. Immediate-release products are conjugated with glycine while long-acting forms are metabolized by amidation. Extended-release nicotinic acid (Niaspan) is metabolized by both pathways and has an intermediate dissolution rate. Nicotinic acid formulations are not necessarily equivalent and care must be taken if substituting one product for another.

References:

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