



# FDA Ensures Equivalence of Generic Drugs

**T**he quality standards for approval of drugs sold in the United States are uniform, whether they are for generic or brand-name drugs. “Since generic drugs generally sell for less than brand-name drugs, many people falsely believe that generics must be inferior to brand-name products,” says Doug Sporn, Director of FDA’s Office of Generic Drugs. “Generic drugs contain exactly the same active ingredients as the brand-name drug and are just as safe and effective.”



Despite the strict standards imposed by the FDA for approval of generic drugs, and their enforcement of these standards, a number of misconceptions about generic drugs persist (See “Myths and Facts about Generics” to the right).

New drugs, like other new products, are developed under patent protection. The patent protects the investment in the drug’s development by giving the company the sole right to sell the drug while the patent is in effect. When patents or other periods of exclusivity on brand-name drugs expire, manufacturers can apply to the FDA to sell generic versions.

“Much of FDA’s review of generic drugs and brand name drugs is the same,” Sporn explains (See “Same FDA Requirements for Brand-Name and Generic Drugs” below). There are eight major parts to the FDA’s review of a firm’s application to sell a generic drug:

- There must be an FDA-approved brand-name drug that is the “same” as the proposed generic. The generic must have the same active ingredient or ingredients and the same labeled strength as this reference product. It must have the same dosage form—tablets, patches and liquids are examples of dosage forms. It must

## Same FDA Requirements for Brand-Name and Generic Drugs

	Brand-Name Drug	Generic Drug
For reformulations of a drug or generic versions of a drug, FDA reviews data showing the drug is bioequivalent to the one used in the original safety and efficacy testing.	✓	✓
FDA evaluates the manufacturer’s adherence to good manufacturing practices before the drug is marketed.	✓	✓
FDA reviews the active and inactive ingredients used in the formula before the drug is marketed.	✓	✓
FDA reviews tests of the active ingredient or ingredients.	✓	✓
FDA reviews tests of the actual drug product.	✓	✓
FDA reviews the drug’s labeling.	✓	✓
Manufacturer must seek FDA approval before making major manufacturing changes or reformulating the drug.	✓	✓
Manufacturer must report adverse reactions and serious adverse health effects to the FDA.	✓	✓
FDA periodically inspects manufacturing plants.	✓	✓
FDA monitors drug quality after approval.	✓	✓

## Myths and Facts about Generic Drugs

**MYTH:** *Generics take longer to act in the body.*

**FACT:** The firm seeking to sell a generic drug must show that its drug delivers the same amount of active ingredient in the same timeframe as the original product.

**MYTH:** *Generics are not as potent as brand-name drugs.*

**FACT:** FDA requires generics to have the same quality, strength, purity, and stability as brand-name drugs.

**MYTH:** *Generics are not as safe as brand-name drugs.*

**FACT:** FDA requires that all drugs be safe and effective and that their benefits outweigh their risks. Since generics use the same active ingredients and are shown to work the same way in the body, they have the same risk-benefit profile as their brand-name counterparts.

**MYTH:** *Brand-name drugs are made in modern manufacturing facilities, and generics are often made in substandard facilities.*

**FACT:** FDA won’t permit drugs to be made in substandard facilities. FDA conducts about 3,500 inspections a year to ensure standards are met. Generic firms have facilities comparable to those of brand-name firms. In fact, brand-name firms account for an estimated 50 percent of generic drug production. They frequently make copies of their own or other brand-name drugs but sell them without the brand name.

**MYTH:** *Generic drugs are likely to cause more side effects.*

**FACT:** There is no evidence of this. FDA monitors reports of adverse drug reactions and has found no difference in the rates between generic and brand-name drugs.

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— Doug Sporn, Director of  
FDA’s Office of Generic Drugs

be administered the same way, for example, swallowed as a pill or given as an injection.

- The manufacturer must show the generic drug is “bioequivalent” to the brand-name drug (See “What Is Bioequivalence?” below).
- The generic drug’s labeling must contain information that is essentially the same as that of the approved drug.
- The firm must fully document the generic drug’s chemistry, manufacturing steps, and quality control measures. Each step of the process must be detailed for FDA review.
- The firm must assure the FDA that the raw materials and the finished product meet USP specifications, if these have been set. The USP, or U.S. Pharmacopoeia, is the non-profit, scientific body chartered by Congress to set standards for drug purity in this country.
- The firm must show that its generic drug is stable under extremes of heat and humidity before it can be sold. Once on the market, the firm must continue to monitor the drug’s stability. The firm must show that the container and its closure system won’t interact with the drug. Firms making sterile drugs must submit sterility assurance data and data showing microbiologic integrity of these products.
- The firm must provide a full description of the facilities it uses to manufacture, process, test, package, label and control the drug. It

must certify that it complies with federal regulations about current good manufacturing practices and undergo FDA inspection of the manufacturing facility to assure compliance.

- Before FDA approves a generic drug, it usually conducts a product-specific inspection at the proposed manufacturing site to make sure the firm is capable of meeting its application commitments and to ensure the firm can manufacture the product consistently. “Generic competition helps keep

the cost of drugs down,” Sporn says. “It also encourages the research-based drug companies to keep finding newer and better medicines that have patent protection.”

When retired federal auditor Stuart Addison goes to the pharmacy in Margate, Fla., he has the pharmacist fill his prescriptions with generic drugs. “My motivation is to keep the prices down,” Addison said, noting that his insurance plan helps pay for his prescriptions. “My pocket-book isn’t directly affected; but, in the long run, I’m helping keep insurance premiums down.” Generic drugs save consumers an estimated \$8 to \$10 billion a year at retail pharmacies (according to the Congressional Budget Office). Even more billions are saved when hospitals use generics.

“FDA-approved generic drugs are bioequivalent and therapeutically equivalent to their brand-name counterparts,” says Sporn. “People can use them with total confidence.”

## What Is Bioequivalence?

Generics are not required to replicate the extensive clinical trials that have already been used in the development of the original, brand-name drug. These tests usually involve a few hundred to a few thousand patients. Since the safety and efficacy of the brand-name product has already been well established in clinical testing and frequently many years of patient use, it is scientifically unnecessary, and would be unethical, to require that such extensive testing be repeated in human subjects for each generic drug that a firm wishes to market. Instead, generic applicants must scientifically demonstrate that their product is bioequivalent (i.e., performs in the same manner) to the pioneer drug.

One way scientists demonstrate bioequivalence is to measure the time it takes the generic drug to reach the bloodstream in 24 to 36 healthy, normal volunteers. This gives them the rate of absorption—or bioavailability—of the generic drug, which they then compare to that of the pioneer drug. The generic version must deliver the same amount of active ingredients into a patient’s bloodstream in the same amount of time as the pioneer drug.

Using bioequivalence as the basis for approving generic copies of drug products was established by the Drug Price Competition and Patent Term Restoration Act of 1984, also known as the Waxman-Hatch Act. Brand-name drugs are subject to the same bioequivalency tests as generics when their manufacturers reformulate them.

## FACTS ABOUT GENERIC DRUGS



**WHAT ARE GENERIC DRUGS?** A generic drug is the same as a brand-name drug in: dosage, safety, strength, quality, the way it works, the way it is taken, and the way it should be used.

**ARE GENERIC DRUGS AS SAFE AS BRAND-NAME DRUGS?** **Yes.** The FDA says that all drugs must work well and be safe. Generic drugs use the same active ingredients as brand-name drugs and work the same way. So they have the same risks and benefits as the brand-name drugs.

**ARE GENERIC DRUGS AS STRONG AS BRAND-NAME DRUGS?** **Yes.** FDA requires generic drugs must be as: high quality, strong, pure, and stable as brand-name drugs.

**ARE BRAND-NAME DRUGS MADE IN BETTER FACTORIES THAN GENERIC DRUGS?** **No.** All factories must meet the same high standards. If the factories do not meet certain standards, the FDA won't allow them to make drugs.

**IF BRAND-NAME DRUGS AND GENERIC DRUGS HAVE THE SAME ACTIVE INGREDIENTS, WHY DO THEY LOOK DIFFERENT?** In the United States, trademark laws do not allow generic drugs to look exactly like the brand-name drug. However, the generic drug must have the same active ingredients. Colors, flavors, and certain other parts may be different. But these things don't affect the way the drug works and they are looked at by FDA.

**DOES EVERY BRAND-NAME DRUG HAVE A GENERIC DRUG?** **No.** When new drugs are first made they have drug patents. Most drug patents are protected for 17 years. The patent protects the company that made the drug first. The patent doesn't allow anyone else to make and sell the

drug. When the patent expires, other drug companies can start selling the generic version of the drug. But, first, they must test the drug and the FDA must approve it.

**DO GENERIC DRUGS TAKE LONGER TO WORK IN THE BODY?** **No.** Generic drugs work in the same way and in the same amount of time as brand-name drugs.

**WHY ARE GENERIC DRUGS LESS EXPENSIVE?** Creating a drug costs lots of money. Since generic drug makers do not develop a drug from scratch, the costs to bring the drug to market are less. But they must show that their product performs in the same way as the brand-name drug. All generic drugs are approved by FDA.

Your medication guide should be kept with you and up to date. List your prescription and over-the-counter medicines as well as your dietary supplements. Also include any vitamins and herbal remedies you take. Here is an example of what your medication guide might look like:

Name of my Medicine	How much do I take?	When do I take it?	What do I use it for?
Xxxx (example)	1 tablet 400 mg		

### WHAT IS THE BEST SOURCE OF INFORMATION ABOUT GENERIC DRUGS?

Contact your doctor, pharmacist or other healthcare worker for information on your generic drugs. For more information, you can also visit the FDA website at: [www.fda.gov/cder](http://www.fda.gov/cder) and click on "Consumer Education".

**Generic Drugs:  
Safe. Effective. FDA Approved.**

For more information call 1-888-INFO-FDA (1-888-463-6332) or go to [www.fda.gov](http://www.fda.gov)



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