



Your *CYP3A5* Genetic Test Results and What They Mean

CYP3A5: Poor Metabolizer #501



Common differences in the *CYP3A5* gene can affect how you respond to some medicines

We recently tested you for the *CYP3A5* gene. This info sheet explains the test, your results, and what your doctor may do with that information.

Genes are pieces of DNA that we inherit from our parents. Genes provide the instructions to make our bodies look and work as they do. Some genes affect the way medicines work in the body. When comparing a group of people, there can be slight differences in each gene's structure. These differences can affect how people react to medicine.

Some gene differences might make it harder for the body to get rid of some medicines. This means that usual doses of the medicine could give some people unexpected side effects. Some gene differences can cause the body to use up a medicine too fast. This means that normal doses won't work as well and the person may need higher doses. Some gene differences won't let certain medicines work in the body at all. This means a different medicine may work better.

The test we did was for a gene called Cytochrome P450 3A5 (abbreviated *CYP3A5*). This gene makes an enzyme that breaks down, or metabolizes, medicines in the body. Breaking down a medicine can either make it work as intended or make it stop working. It's common to have slight variations in the *CYP3A5* gene that affect how the enzyme works. Depending on these variations, people will fall into one of three possible groups:

1. **Poor metabolizers** – The *CYP3A5* enzyme has very little activity. About 30% of African Americans and 85% of individuals of European descent are poor metabolizers. People who are poor metabolizers receive normal doses of tacrolimus.

2. **Intermediate metabolizers** – The CYP3A5 enzyme has some activity, but less than the normal metabolizers. About 50% of African Americans and 15% of individuals of European descent are intermediate metabolizers. People who are intermediate metabolizers may require higher than usual doses of tacrolimus.
3. **Normal metabolizers** – The CYP3A5 enzyme has normal activity. About 20% of African Americans and 1% of individuals of European descent are normal metabolizers. People who are normal metabolizers need higher than usual doses of tacrolimus.

Your result puts you in the Poor metabolizer group.

Your doctor can use your test result to choose the medicine most likely to work or to choose the best dose of medicine for you.

A number of medicines could be affected, but immunosuppressants (tacrolimus, sirolimus, and cyclosporine) have the most evidence for dose adjustments based on CYP3A5 genotype. The CYP3A5 enzyme activity can also be affected by some drugs. It is important to tell the doctor all the medicines and supplements you are taking.

Research continues to be done on what medications are affected by genetic test results. For more details about which medicines are broken down by CYP3A5, please go to www.cincinnatichildrens.org/gps or www.pharmgkb.org.

Questions?

If you have questions about your pharmacogenetic test results from CCHMC, call 513-636-4474 or email gpsconsult@cchmc.org.

This document is not intended to take the place of the care and attention of your personal physician or other professional medical services. Our aim is to promote active participation in your care and treatment by providing information and education. Questions about individual health concerns or specific treatment options should be discussed with your physician.

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