

Mitochondria are sometimes called the “batteries of the cells.” The drugs used to treat HIV can affect the way the mitochondria make energy. Fatty acid oxidation (FAO) is the process the body uses to turn fat into energy in the mitochondria. We wanted to see if HIV drugs affect FAO in uninfected babies born to mothers living with HIV.

WHO PARTICIPATED

522 babies from SMARTT



We looked at 522 HIV-exposed, uninfected babies enrolled in the PHACS SMARTT study. All babies had an available blood sample from their first week of life.

WHAT WE DID

Key	
FAO	Fatty Acid Oxidation
ACP	Acylcarnitine Profiles

Acylcarnitines are by-products of FAO that can be measured in the blood. When FAO is abnormal, there are usually high levels of acylcarnitines. We measured 34 acylcarnitine levels in the blood from the babies. We looked at the **acylcarnitine profiles** (ACPs), which told us how many acylcarnitines were in the blood.

WHAT WE FOUND



In this study, 1 in 6 babies had abnormal FAO at birth.

About 1 in 6 babies had abnormal acylcarnitine profiles. We found that these babies were more likely:

- to have exposure to alcohol and smoking in the womb;
- to be born early;
- to be shorter and weigh less at birth;
- To have exposure to the HIV drug type “protease inhibitors” (PI) instead of the type called “non-nucleoside reverse transcriptase inhibitors” (NNRTI);
- to have higher levels in their blood of a certain marker of liver injury.

WHAT WE LEARNED

At 1 year of age, babies with both normal and abnormal ACP were developing (reaching milestones) the same.



We found that a baby’s abnormal FAO was linked to exposure to alcohol, smoking, and the HIV drug type protease inhibitors during pregnancy. Abnormal FAO in babies may affect their growth during pregnancy. It may also affect liver health during their first week of life, but it doesn’t seem to affect the baby’s development after birth.

We need more research about how abnormal FAO affects the health of babies in the womb, after birth, and as they grow up.