**MACROS BROKEN DOWN TO**

CHO Glucose

Fat Fatty acids

Protein Amino acids

Dietary glucose 🡪 muscles & liver = stored glycogen.

TO GET ENERGY:

**Kreb's Cycle Glycolysis**

Glucose only

Fat + Glucose 3 carbon pyruvate 3 carbon pyruvate

Triglycerides Mitochondria

-- Glycerol

-- 3 Fatty Acids 2C Acetyl CoA CO2

Blood

Kreb's Cycle

Muscle

Mitochondria ETS

FA's CO2 H2O

**BETA OXIDATION**

2C Actl CoA 2C Actl CoA 2C Actl CoA

**RECAP**

CHO & FAT ultimately produce lots of Acetyl CoA

From Pyruvate (via glucose) & Fatty Acids (via Beta Oxidation)

**Acetyl CoA**

**Acetyl coenzyme A** or **acetyl-CoA** is a molecule that participates in many biochemical reactions in protein, carbohydrate and lipid metabolism.

Its main function is to deliver the acetyl group to the citric acid cycle (Krebs cycle) to be oxidized for energy production.

CoA is acetylated to acetyl-CoA by the breakdown of carbohydrates through glycolysis and by the breakdown of fatty acids through β-oxidation.

Acetyl-CoA then enters the citric acid cycle, where the acetyl group is oxidized to carbon dioxide and water, and the energy released captured in the form of 11 ATP and one GTP per acetyl group.

**LOW CHO DIET - KETO DIET**

Results in:

1) Body uses up all muscle and liver glycogen & H2O = quick weight loss.

2) Need glucose, so Gluco-neo-genesis occurs using:

-- Amino Acids.

-- Glycerol.

-- Lactate.

-- Oxaloacetate

Oxaloacetate combines with Acetyl CoA

Citrate

Stokes Kreb's Cycle

Makes more oxaloacetate

Also made from pyruvate

Low carb = shuts down Kreb's Cycle & decreases the ability to make oxaloacetate from pyruvate & pyruvate from oxaloacetate.

FA's 🡪 Acetyl CoA 🡪 Kreb's, but with no oxaloacetate, won't work, therefore with no CHO to replenish oxaloacetate, then forced to produce Ketones.

No CHO & minimal glucose from gluco-neo-genesis = more ketones.

The Acetyl CoA has to go somewhere, so the liver drives it to pathways that make ketones acetoacetate 🡪 then released to blood, then to heart, muscles, and brain.

The body tries to rid itself of acetone, so a low CHO diet = acetone breath.