

Metabolism and Nutrients Chapter

Regulation

I. Regulation—Insulin/Glucagon Model

a. High blood sugar

- i. promotes insulin release from pancreas which stimulates glucose uptake and glucagon formation.

b. Low blood sugar

- i. promotes glucagon release from pancreas which stimulates glycogen breakdown.

II. Fasting

Regulation occurs when your body has low blood sugar and must raise blood glucose levels

a. Glucagon

Protein hormone that targets the liver. Raises blood glucose level by 2 modes of action.

- i. Glycogenolysis—breakdown of glycogen to glucose
- ii. Gluconeogenesis—formation of glucose from small components

b. Lipases

Breaks down fats (**lipolysis**) when glucose stores are depletion

- i. Lipolysis—lipases split triglycerides into glycerol(proceeds to glycolysis) and 3 fatty acids(proceeds to β oxidation)
 1. β oxidation – breaks fatty acids into acyl units which are coupled then with CoA and changed into acetyl CoA and used for Krebs's Cycle.

III. Fed

Regulation occurs when your body has high blood sugar and must lower blood glucose levels

a. Insulin

Targets liver, muscle, adipose tissue. Uptakes glucose from blood by 3 main processes.

- i. Glycogenesis—formation of glycogen
- ii. Lipogenesis—formation of fat
- iii. Protein Synthesis

Notes taken by Rachel Bassett, Peer Coach.

