March 2010 QUESTION 05

Describe the production and metabolism of lactate

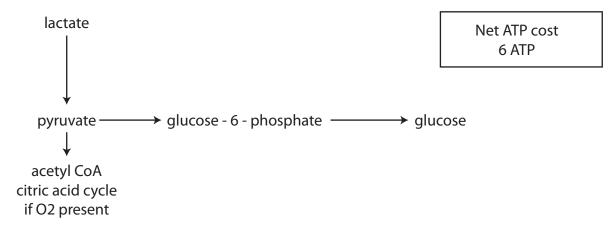
Lactate

normal plasma level is <2.0 mmol/L normal production is approximately 1400 mmol/day produced mainly in skin, gut, muscle, brain and erythrocytes peripheral production and its metabolism in the liver is known as the cori cycle

Lactate production (muscle) production rate is determined by the amount of NADH Net ATP production 2 ATP glucose glucose - 6 - phosphate fructose 1,6-bisphoshonate NADH lactic acid → lactate + H⁺ 2 pyruvate – lactate dehydrogenase acetyl CoA (LDH) citric acid cycle if O2 present

Lactate metabolism (liver)

lactate is transported to the liver via plasma where it is converted to glucose by gluconeogenesis



Lactic acidosis occurs from

excessive production

Type A tissue hypoxia eg exercise, convulsions

Type B other eg inborn errors of metabolism, toxins, malignancy

impaired hepatic metabolism

reduced blood flow, diabetes, toxicity