ORGAN PRESERVATION

ORGAN PRESERVATION

Transplant organs need to be stored and preserved in the period between procurement from the donor and transplan - tation into the recipient. Static cold storage is the traditional - method of organ preservation, but more recently there have been developments in preservation b y machine perfusion. Le Foie: Études anatomiques et

Middle hepatic vein Left hepatic vein II I IV III Umbilical vein (remnant) Hepatic duct Inferior vena cava Hepatic artery Portal vein Bile duct

In the absence of oxygen, organs switch from aerobic to anaerobic metabolism. The mitochondrial electron transport chain cannot function without oxygen as the final electron acceptor. Oxidative phosphorylation ceases and, in consequence, so does the tricarboxylic acid (Krebs) cycle and the link reaction (conversion of pyruvate to acetyl coenzyme A). This leaves glycolysis as the only source of adenosine triphosphate (ATP). Anaerobic metabolism of one glucose molecule produces only two ATP molecules compared with the 36 ATP molecules that are produced during aerobic metabolism. Consumption of ATP rapidly exceeds production, + + leading to depletion of cellular ATP . Na /K ATPase pumps + are disabled and this leads to an influx of Na ions into the + cell down their concentration gradient. Na ions are followed by H O by osmosis and this causes swelling and disruption 2 of membrane-bound intracellular organelles and lysis of the cell membrane. Anaerobic glycolysis generates lactate and promotes intracellular acidosis. At low pH phospholipase and protease enzymes are activated and cause lysosomal damage and eventually cell death. ATP-dependent active transport of calcium out of cells is impeded, leading to the 2+ intracellular accumulation of Ca ions and activation of the calcium-dependent processes. This leads to breakdown of the cytoskeleton and loss of cell structure.

Revision #1
Created 2025-12-31 15:31:41 UTC by Omar Ayman
Updated 2025-12-31 15:31:41 UTC by Omar Ayman