

HTK Solution for Multi-Organ Preservation and Protection

Custodiol® HTK (Histidine-Tryptophan-Ketoglutarate) solution is used by Leading Transplant Centers worldwide for the preservation of the **Kidney, Liver, Heart, Lung** and **Pancreas** during organ transplantation and by some of the leading Cardiac Surgery Centers as a **cardioplegic solution** in cardiac surgery.

Custodiol® a product approved by the US FDA as a Medical Device and being a Multi-Organ solution is also the solution of choice as an organ preservation solution for **Non-Heart Beating Donor Transplantation**.

Indications of Custodiol® HTK solution include cardioplegia, organ protection and surface cooling of the heart, liver and kidney in situ as well as for transportation of organs from donor to recipient. Custodiol® HTK solution is also used for the protection of the venous transplants (coronary vessel replacement, mainly of the great saphenous vein).

In-situ protection

Due to high systemic tolerance all kinds of operation procedures in ischemic organs may be performed such as heart surgery, kidney tumor resection and split liver donation.

Transplantation

Multi organ procurement using Custodiol® HTK solution

- ▶ Reliable preservation of donor organs
- ▶ Easier handling due to simultaneous in-situ perfusion of all organs
- ▶ Increased organ availability due to excellent postoperative function, even with kidney of non-heart beating donors

Autologous graft protection with Custodiol® HTK solution

Excellent preservation of venous and arterial grafts
Reduced rise in permeability of the endothelial cell layer
Effective even at room temperature

Custodiol® HTK solution for Cardiac surgery and Transplantation

High rate of spontaneous return to sinus rhythm
Minimized cell necrosis
Less depletion of ATP stores
Remarkably increased protective potency

Liver Transplantation with Custodiol® HTK solution

Extended cold preservation time
Better preservation of micro-circulation
Low degree of cell edema
Prevention of leukocyte adhesion
Reduced biliary tract complications

Kidney Transplantation with Custodiol® HTK solution

Rapid graft function
Prolongation of ischemic tolerance
Lower frequency of post-operative dialysis
Good Structural protection even at 25 °C
High rate of long time graft survival

Lung Transplantation with Custodiol® HTK solution

Good pulmonary tissue preservation in conjunction with prostaglandins, excellent postoperative functional result
Low post-transplant pulmonary edema
Good preservation of combined heart-lung graft

Pancreas Transplantation with Custodiol® HTK solution

Good endocrine and exocrine function of pancreatic tissue post-operatively
Suitable for in-situ flush of human pancreases prior to subsequent islet isolation, culture and transplantation
Reliable graft function in a porcine model after upto 24 hours cold storage

Properties of Custodiol® HTK solution

Low potassium concentration to minimize risks
Low sodium concentration for safe organ inactivation
Extended buffer capacity only possible with high histidine / histidine-Hcl concentration
Tryptophane supports membrane integrity
Alpha- ketoglutarate serves as a substrate for aerobic energy production during the induction of cardioplegia, and when restarting the heart
HTK is perfused as a cold solution, so that its hypothermic effect contributes to a decreased metabolic rate
All components of HTK solution are naturally occurring physiological substances except for the inert mannitol, therefore no toxic effects have ever been observed

Advantages of Custodiol® HTK solution

Use in-situ and during hypothermic storage
Rapid homogenous cooling due to low viscosity
Superior recovery of function
Excellent ischemic tolerance
High buffering capacity
Easier surgical handling due to excellent visibility
Reduced risk of post-aggression syndrome
Virtual absence of side effects
Simple perfusion technique (ready-to-use, no additives or preparation) saves cost of filters, additives and staff time
Shortened postoperative intensive care period

Presentations of Custodiol® HTK solution

2 litre bag (cartons of 4 bags)
1 litre bottle (cartons of 6 bottles)

The Custodiol® bag, Cryovac M312, is made of a new generation of advanced films for medical solutions. The material is based on exclusive multilayer technology resulting in a film that is exceptionally clear, extremely durable with a wide range of superior physical properties.

Storage

2 – 15 °C

Shelf-Life

1 year