

Results. (CE vs. UW): There were no differences in end-ischemic tissue levels of ATP (0.77 ± 0.34 vs. 0.86 ± 0.231 $\mu\text{mol/g dw}$) or phosphocreatine (0.44 ± 0.31 vs. 0.23 ± 0.24 $\mu\text{mol/g dw}$) between Ce and UW but we found an impressive inhibition of lactate accumulation during ischemia in Ce (6.58 ± 1.49 vs. 39.15 ± 6.85 $\mu\text{mole/g dw}^*$) with notwithstanding also reduced tissue glucose levels (2.85 ± 4.11 vs. 18.93 ± 9.03 $\mu\text{mol/g dw}^*$). Upon reperfusion, intestines stored in Ce revealed a better maintenance of transmucosal carbohydrate absorption as judged from the venous effluent concentration of galactose (0.58 ± 0.24 vs. 0.18 ± 0.15 $\text{mg}\%$) as well as a reduction of intestinal release of LDH when compared to preparations stored in UW (9.7 ± 4.4 vs. 18.2 ± 4.6 IU* 30 min of rep. Ce vs. UW). No differences were seen with respect to the integrity of the transcapillary barrier function as assessed by luminal water loss upon reperfusion (1.48 ± 0.43 vs. 1.50 ± 0.21 ml/min ns, Ce vs. UW). It is concluded that Celsior[®], originally designed for heart transplantation, seems to be a suitable solution also for the preservation of the gut. (Data given as mean \pm SD of $n \geq 5$ observations; *: $p < 0.05$ by Mann-Whitney U-test.

177 An Experimental Model

for Intestinal Reperfusion Studies *in vitro*

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Two different experimental models for intestinal graft reperfusion are presented. Reperfusion may be carried out alternatively with an acellular solution or with blood, both of them avoiding surgical implant of the graft. Combination of these techniques allow studies of intestinal cold preservation and easy pharmacological modulation of the organ previous to graft implant.

Methods. Wag syngeneic female rats (225–250 g) are used. Intestinal grafts are obtained according to the technique described by Monchik. Vascular pedicles include the portal vein (with a 16 G teflon catheter) and the superior mesenteric artery (20 G). The organ is washed with heparinized Ringer (4 °C, 10 ml), and preserved for 6 h in Eurocollins (4 °C).

a. Oxygenated acellular reperfusion (OAR). Through the arterial vessel, an acellular solution (Ringer's lactate enriched with glucose, verapamil, insulin, norepi-

nephrine, pentobarbital and dexamethasone) is perfused, while the venous effluent is collected. The arterial pressure and the mesenteric inflow are recorded.

b. Ex vivo sanguineous reperfusion. Under ether anesthesia, the lower aorta and the portal vein of a female WAG rat (250 g) are cannulated. Once the animal is heparinized and the superior mesenteric artery clamped, both catheters are connected to the graft, which has been previously warmed (37 °C).

Results. Acellular reperfusion activates the graft, as demonstrated by the restoration of cellular metabolism, with O₂ and glucose uptake, and pH reduction with CO₂ production. The peristaltic pump allows a pulsatile inflow, quite similar to normal blood perfusion.

The *ex vivo* technique is well-tolerated by the donor and it provides sanguineous perfusion of the graft for 30 min, avoiding pumps and oxygenators. Thus, the intestine retains a normal color and peristaltic movements.

Conclusions. These *in vitro* perfusion techniques restore the metabolism of the graft, allowing pathological and biochemical studies of the intestine in order to assess the efficacy of preservation solutions and to check the role of leukocytes in the reperfusion damage of the intestinal grafts.

178 Anti-LFA-1 but not Anti- $\alpha 4$ Monoclonal Antibodies Induce Long-term Fetal Small Bowel Graft Survival in Mice

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Small bowel transplantation, which appears as the only alternative beside total parenteral nutrition for chronic intestinal failure, is still hampered by a high morbidity and mortality linked to the heavy non-specific immunosuppression which is required by the transplantation of this lymphoid organ. Adhesion molecules have been shown to play a critical role in the interaction of T cells with antigen-presenting cells or target cells, and thus appears as potential targets for specific immunosuppression. In this work, we studied the effect of a transitory administration of anti-LFA-1 monoclonal antibodies (mAb) or of anti- $\alpha 4$ mAb or of both of them in the prevention of rejection in a model of fetal small-bowel transplantation in mice.