

## **Investigation of kidney mitochondrial injury caused by ischemia/reperfusion**

Ischemia affects kidney function not only in kidney transplantation but also during partial nephrectomy. The avoidance of ischemic renal damage during partial nephrectomy is extremely important as duration of arterial clamping influences postoperative kidney function. It is well described, that mitochondria are very sensitive to ischemia-caused injury. Ischemia causes the reduced activity of mitochondrial respiratory chain, decrease in ATP production, formation of superoxide radicals and decrease in activity of mitochondrial antioxidant system. The duration of warm ischemia that would be safe for postoperative kidney function during partial nephrectomy remains under investigations. Biochemical mechanisms at the level of mitochondria and their dependence on acute ischemia time are insufficiently explored.

Therefore, the aim of this study is to investigate the effects of duration of renal ischemia (20 -60 min) on mitochondria, by using *in vitro* and *in vivo* rat ischemia model. Finding of a biologically active compounds which diminishes negative ischemia impact to kidney mitochondria would be solution in situations when longer time of kidney clamping is necessary.