

# EFFECT OF THYROTROPIN ON KIDNEY DAMAGE OF STORED BEFORE TRANSPLANTATION BY HYPOTHERMIC PERFUSION

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<sup>†</sup>This abstract is dedicated to the memory of the late Prof. Florian Ryszka

## Introduction

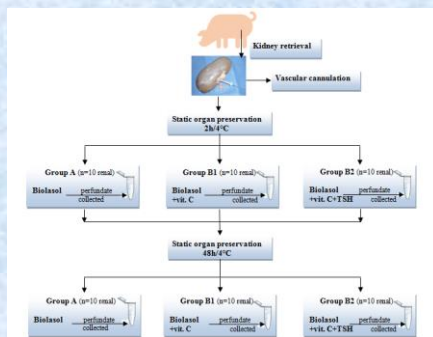
Thyrotropin (TSH, Thyroid-stimulating hormone) is a hormone that is secreted in the anterior of pituitary gland. It stimulates the thyroid gland to produce thyroxine (T<sub>4</sub>) and triiodothyronine (T<sub>3</sub>). It has many unique properties, including the stimulation of proliferation and hypertrophy of thyrocytes. TSH influences on the proper functioning of the kidneys. It affects the renal blood flow, glomerular filtration, electrolyte pumps, secretory and absorptive capacity of tubuli, and kidney structure. The aim of the study was to analyse the protective effect of thyrotropin, as a component of Biolasal® solution (Biocheft, Sosnowiec, Poland), on the prevention of ischemia-reperfusion injury of nephrons.

## Materials and Methods

Biolasal was from FZNP Biocheft (Sosnowiec, Poland) and included: potassium chloride (10 mmol/L), sodium tricitrate (30 mmol/L), sodium hydrocarbonate (5 mmol/L), magnesium fumarate (5 mmol/L), dextran 70 kDa (0.7 g/L), glucose (167 mmol/L) and EDTA (5 mmol/L). The osmotic pressure of the solution is 330 mOsm/L, pH=7.4. The solution was modified by the addition of ascorbic acid (0.088g/l) and TSH at a dose of 1 µg/L. Thyrotropin was from FZNP Biocheft (Sosnowiec, Poland). All substances used in the study were of analytical grade.

The pigs used for the study came from Meat Plant H.A.M in Radzionkow, Poland. The study was conducted with the consent of the II Local Ethics Commission for Animal Experiments in Cracow, Poland (number 1046/2013) and in accordance with the European Union Directive (EU guideline 93/19/EC) on the protection of animals during slaughter or killing. 30 kidneys were collected from 15 Polish Large White pigs. Age of animals: 175-180 days, weight: 90-110 kg. The collected kidneys were distributed randomly to the following study groups.

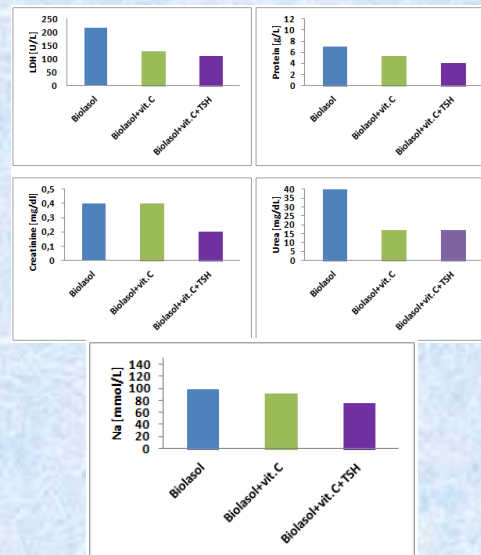
## Study Design



## Biochemical Determinants

The activities of LDH (lactate dehydrogenase), urea, creatinine, and total protein concentrations (using reagent kits from BioMérieux, Lyon, France) as well as sodium levels (using Pointe Scientific kits, Marseille, France) were determined in the perfusate samples. The analyses were carried out in accordance with the manufacturers' instructions. The measurements were carried out using the Marcel S330 spectrophotometer (Marcel, Poland). The photometric accuracy of the spectrophotometer was  $\pm 0.005$  Abs.

## Results



TSH affects the effectiveness of kidney perfusion and preservation. It was found that the activity / concentration of markers of renal function was lowest in Biolasal + vit. C + TSH perfundates.

## Conclusions

Thyrotropin as a component of the Biolasal preservation solution has a positive effect on the protection of the kidneys during ischemia-reperfusion.

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## References

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