

### 103. The Influence of Different Water Temperatures on Morphological Characteristics of Sterlet (*Acipenser ruthenus*) Erythrocyte Populations

Kolarevic Jelena, Mirjana Lenhardt, Predrag Cakic and Zoran Gacic

Institute for Biological Research, 29 Novembra 142, 11000 Belgrade, Serbia and Montenegro  
Email: jelenakolarevic@hotmail.com

The erythron characterization of sterlet (*Acipenser ruthenus*) caught in the River Danube on five different water temperatures (1°C, 2°C, 6.5°C, 8°C and 11°C) was examined. The image analysis was used as a more objective mean to determine heterogenic structure of the erythrocyte population. Leica Letz DM RB microscope with attached TK-1280E JVC color video camera was used to convey profiles to monitor and measurement was done with Leica Qwin program. Cells and nuclear major and minor axis were measured, with surface areas and form factors ( $4\pi$  area/perimeter<sup>2</sup>) calculated later on. Average values for major cell axis range from  $12.31\pm 1.01$  to  $12.81\pm 1.27\mu\text{m}$  and from  $8.92\pm 0.78\mu\text{m}$  to  $9.50\pm 0.92\mu\text{m}$  for minor. Nuclear major and minor axis average values are in interval from  $5.12\pm 0.59\mu\text{m}$  to  $6.07\pm 0.89\mu\text{m}$  and from  $3.86\pm 0.46\mu\text{m}$  to  $4.92\pm 0.95\mu\text{m}$  respectively. No correlation between these parameters and water temperature was found. Relationship between nuclear and cell form factor, shows significant difference (t-test,  $p=0.0082$ ) between erythron profile at 11°C and at lower temperatures. Calculated values for cell and nuclear form factors range from 0.730 to 0.889 and from 0.740 to 0.891 except at 11°C where this values range between 0.829 and 1.00 and 0.860 and 1.00 respectively. Q10 values ( $Q10=k2/k1^{10(t2-t1)}$ ) for indices concerned confirmed that change of the temperature have effect on nuclear major and cell major axis ratio and nuclear and cell area ratio. This study shows that morphological characterization of erythrocyte population provides useful index of metabolic activity. In ecotoxicological studies it can be good indicator of stress induced by different types of habitat changes (water and sediment pollution).