

# COMPARISON OF HEMATOLOGY AND SERUM BIOCHEMISTRY DATA FOR APPARENTLY HEALTHY, ILL AND PREGNANT FREE-RANGING BELUGA WHALE (*Delphinapterus leucas*) FROM OKHOTSK SEA

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## ABSTRACT

Hematologic and biochemical reference values for free-ranging cetacean populations provide important baseline information with which to evaluate population health and disease, and also to evaluate the condition of individual animals that captured for tagging or stranded. Hematologic reference values have been published for free-ranging beluga whale from different Arctic areas.<sup>1,2,3</sup> No information exists on health parameters of the beluga whale in Okhotsk Sea. In 2009 Severtsov Institute of Ecology and Evolution of Russian Academy of Sciences initiated a long-term White Whale Program. Last summer, research effort was concentrated on Okhotsk Sea beluga whale population. The aim of this year study was to obtain hematologic and serum biochemistry reference intervals for this population of beluga whale. Beluga whales (28) were live-captured between 25 July to September, 15, 2010 for tagging as well as for oceanaria. The whales were captured by encircling them with a net. The whales were untangled from the net and restrained in shallow water using a cushioned rope tied around the fluke. All animals were examined for length, axillary girth, blubber thickness (determined by ultrasound in cervical area), color of skin, teeth sizes, sex, and external pathologies (e.g., extensive skin lesions, urogenital lesions, emaciated body conditions, buoyancy, posture, respiratory parameters). The whales were categorized as immature or mature-sized based on body length criteria. Skin color as well provided some indication of age. Mature female belugas received ultrasound examination to determine pregnancy status. Blood samples were drawn from the periarterial venous rete in the fluke immediately after capture. Blood was collected in vacutainer tubes for hematology, serum and plasma separation. On site, manual hematological techniques were applied for leukocyte, erythrocyte, relative leukocyte determinations, and erythrocyte sedimentation rate. The concentrations of serum chemistry analytes were determined in laboratory with automated analyzer (the Laboratory is participant of international quality's control program Labquality, Finland). Our sample sizes of samples for mature and immature, male and female, pregnant and dry belugas, apparently healthy and supposedly ill animals were presented in Table 1. Statistical analyses were performed using Statistika 7.0. One-way ANOVA were used to determine the influence of sex and age. To maximize the value of the full data set, we combined values from males and females and immature and mature animals when no sex- and age-related differences were noted. Juvenile animals had a higher mean relative percentage of lymphocytes and lower mean ESR compared with adult. Males had higher concentrations than females for creatinine, glucose, calcium and iron. Females had higher mean cholesterol than males. Pregnant females had lower RBC, mean relative percentage of lymphocytes, albumin and ALP concentration than dry females. The animals with illnesses had significantly lower level of RBC, relative percentage of lymphocytes, Hb and creatinine concentrations than apparently healthy belugas. But ill belugas had higher levels than healthy

animals for WBC, relative percentage of eosinophils and bands, AST, total protein, globulin, CPK, phosphorus and uric acid. These reference intervals provide useful information for future studies of health assessment on this and other populations of beluga whales.

Table 1. Sample sizes of samples for mature and immature, male and female, pregnant and dry belugas, apparently healthy and supposedly ill animals.

Sex	Healthy belugas	Ill belugas	Pregnant belugas	Age
Male	4	1	0	Immature
Male	6	1	0	Mature
Female	3	0	0	Immature
Female	6	2	5	mature

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