

CLINICAL CHEMISTRY AND HEMATOLOGIC FINDINGS IN THE HARBOUR PORPOISE (*PHOCOENA PHOCOENA*) FROM DANISH WATERS

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Introduction

Since the first publications of data on the blood composition in the harbour porpoise (ANDERSEN, 1966 and 1968) the autoanalyzing technique has been commonly introduced and the international system for nomenclature in clinical chemistry (DYBKAER and JÖRGENSEN, 1967) has been accepted by most European countries.

Meanwhile a considerable new pool of data has been collected during our studies resulting in a local set of reference values for the blood of the harbour porpoise. Though the list is under current revision we find that our results should be published for comparison to other Odontocete species and for the benefit of other harbour porpoises now seen more frequently in captivity.

Material

The samples originated from 5 male and 13 female harbour porpoises, *Phocoena phocoena*, trapped in pond nets and held in captivity as described by ANDERSEN (1974, 1978). The captivity periods ranged from a few days to 3 years.

Methods

Blood samples were taken by puncture of the blood vessels in dorsal or ventral sulcus of the tail-fluke. This technic most often resulted in mixed arterio-venous samples because of a consecutive puncture of an artery and a vein. But either arterial or venous samples were occasionally obtained. The samples were stabilized with EDTA or heparin according to the requirements of the department of Clinical Chemistry at Odense Hospital.

Serum and plasma chemistry determinations were made with a multiple channel, continuous flow analyzer (AutoChem, Instrument AB, Box 26, S-18121, Sweden) on samples having been stored at -20°C overnight.

Hematologic determinations were made at the day of blood sampling and determined with an electronic cell counter (Coulter Counter, Electronics, England). Blood leucocyte particle fractions were determined according to ASTRUP et al. (1959).

Results and Discussion

The results from serum and blood determinations are seen in table 1, and the hematologic findings are seen in Table 2.

Normal values for components in human serum and blood are often given as a reference interval with reference to a defined group of people. This ideal situation is not possible to achieve in dolphins. The results are biased, because we most often sample from diseased animals, and we cannot define a normal healthy porpoise.

Our statistical treatment of the values has shown that many of the components are not distributed strictly normally but exhibit different degrees of skewness and kurtosis. The use of arithmetic mean and standard deviation is therefore not an adequate description of the distributions; but since our material is so ill defined we do not consider it worth while to publish detailed statistical description of each component. As long as we have to use captive animals for this kind of work we have to limit our description to the parameters given in the tables and bearing in mind always to use the ciphers with great care.

Therefore, our results must not be used as normal values but as basis for considerations on the state of health of a harbour porpoise.

Table 1. Serum (s) and Blood (b) Components in Harbour Porpoise, *Phocoena Phocoena*.

Variable	Unit	No. of samples	No. of animals	Mean	Min.	Max.	S.D.
s-Lipid	g.l. ⁻¹	30	10	5.9	2.0	18.3	3.5
s-Cholesterol	mmol.l ⁻¹	31	14	4.5	0.1	7.6	1.6
s-Urate	mmol.l ⁻¹	33	15	0.10	0.01	0.78	0.13
s-Carbamide	mmol.l ⁻¹	65	18	15.3	7.6	39	5.2
s-Lactate dehydrogenase	U.l ⁻¹	37	14	810	273	2340	469
s-Aspartate-amino-transferase (GOR)	U.l ⁻¹	33	14	195	2	665	128
s-Alanin-amino-transferase (GPT)	U.l ⁻¹	30	9	93	18	220	54
s-Alkaline phosphatase	U.l ⁻¹	34	14	291	9	800	178
s-Acid phosphatase	U.l ⁻¹	35	15	2.8	1.5	8.3	1.2
s-Sodium	mmol.l ⁻¹	67	18	151	138	179	6
s-Potassium	mmol.l ⁻¹	65	18	3.9	2.6	7.8	0.7
s-Calcium	mmol.l ⁻¹	60	18	2.57	0.68	3.03	0.31
s-Chloride	mmol.l ⁻¹	53	13	110	90	129	8
s-Phosphate	mmol.l ⁻¹	35	15	2.09	1.05	3.59	0.51
s-Bilirubin	mmol.l ⁻¹	27	14	5.3	1.2	10.6	2.6
s-Albumin	g.l ⁻¹	56	16	36	21	46	5
s-Protein	g.l ⁻¹	28	9	73	54	99	12
s-Creatinine	mmol.l ⁻¹	63	17	64	33	160	19
s-Iron (Transferrin-bound)	mmol.l ⁻¹	30	10	61	17	147	30
b-Glucose	mmol.l ⁻¹	5	4	8.6	6.0	14.0	3.1

Table 2. Hematologic Components in the Harbour Porpoise, *Phocoena Phocoena*.

Variable	Unit	No. of samples	No. of animals	Mean	Min.	Max.	S.D.
Erythrocytes	$10^{12} l^{-1}$	76	18	5.2	1.6	6.4	0.8
Erythrocytes volume fraction	1	76	18	0.45	0.14	0.56	0.08
Erythrocytes mean volume	1.10^{-15}	76	18	86	73	127	7
Erythrocytes mean Hb (Fe) content	1.10^{-15}	76	18	1.8	0.2	2.7	0.3
Erythrocytes mean Hb (Fe) concentration	$mmol.l^{-1}$	76	18	21.4	17.3	23.3	1.1
Blood Hb (Fe) concentration	$mmol.l^{-1}$	76	18	9.6	2.7	13.1	1.9
Leucocytes	$10^9 . l^{-1}$	77	18	7.0	2.0	23.3	4.7
Neutrophils non-segmented	1	48	18	0.08	0.01	0.47	0.09
Neutrophils segmented	1	69	18	0.47	0.04	0.94	0.17
Eosinophils	1	66	18	0.07	0.01	0.23	0.05
Lymphocytes	1	70	18	0.37	0.03	0.70	0.14
Monocytes	1	52	18	0.04	0.01	0.25	0.05

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