

From the Medical Department, St. Josephs Hospital, Porsgrunn, Norway

The Red Blood Cell Diameter in Blue Whale and Humpback Whale

By A. HARBOE and A. SCHRUMPF

In the current haematological literature information about the mean diameter of the red cells in most mammals may be found in *Gulliver's* classic paper. Surprisingly enough, representative figures from the big whales are still missing. No measures of this kind were performed by *Laurie* during his extensive investigations in 1932–33 on board of "Southern Princess".

We have therefore, for the sake of completeness, determined the red cell diameter in dried blood films from both blue whale (*Balaenoptera musculus*) and humpback whale (*Megaptera nodosa*).

Method

The films were prepared by *Dr. A. Froili* on board of "Abraham Larsen" during the whaling season in the South Sea 1951–52. It was possible to obtain suitable blood specimens as early as 10 hours after the blue whale and 15 hours after the humpback whale had been killed. Photographs of the *May-Grünwald-Giemsa* stained films were taken and enlarged so that one millimeter on the photo equalizes exactly 1/1000 mm. on the blood film. Correct enlargement was secured through use of an object micrometer scale (*Zeiss*). The diameter of the red cells can thereafter easily be measured with a transparent ruler. The largest and the smallest diameter were measured and their mean reckoned as the cell diameter. The method used is – with minor changes – the same modification of the *Price-Jones* method as used by *Larsen*.

Blood films from one single blue whale and humpback whale were examined.

Results

In the blue whale a mean diameter (M) of 7.7μ was found with a standard deviation (σ) of 0.7μ . The mean difference between the largest and the smallest diameter (f) was 0.4μ .

In the humpback whale, the corresponding figures were as follows: M 8.2 μ , σ 0.7 μ and f 0.7 μ .

The corresponding figures for the human red cell according to *Larsen* are: M 7.80 μ , σ 0.46 μ . The upper normal limit for M is 8.35 μ and the lower limit 7.20 μ .

Our observations do not allow us to determine the borders of normal variation of M in whales. Neither do they indicate the true position of our figures within the field of variation. They show, however, that the red cell diameter of the whale is not very different from that found in other big mammals. Like the human red cell, those of the whale are not far from circular.

Summary

The mean red cell diameter was found to be 7.7 μ in one blue whale and 8.2 μ in one humpback. The red blood cell of the whale is not far from circular.

Zusammenfassung

Als mittlerer Erythrocytendurchmesser wurden bei einem Blauwal 7,7 μ und bei einem Humpback-Wal 8,2 μ gefunden. Das rote Blutkörperchen des Walfisches hat annähernd runde Form.

Résumé

Les auteurs ont mesuré le diamètre moyen des érythrocytes de deux variétés de cétacés (blue whale et humpback whale) qui est respectivement de 7,7 et de 8,2 μ . Les globules rouges des cétacés sont de forme à peu près ronde.

References

Gulliver, G. cit. *E. Ponder*: Hemolysis and related phenomena. Grunc & Stratton, New York 1948. — *Laurie, A. H.*: Discov. Rep. 7, 363, 1933. — *Larsen, G.*: Acta. med. scand. 1948, suppl. 220.