TECHNICAL PAPERS

Total White Cell Counts of Peripheral and Heart Blood of the Rat

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Little attention has been given to the possible difference in white cell distribution in the circulatory system. Law and Heston (*6*) found a marked difference in the total white cell count of heart and peripheral blood in albino mice. Since these workers employed nembutal anesthesia before making the cardiac puncture (*7*) and since nembutal has been shown to produce hemodilution in experimental animals (*1–3, 5*), there remained the question of whether the low white count of blood taken from the heart was due to the anesthesia or was a normal condition in the unanesthetized animal.

Blood samples were taken from the periphery and heart of 10 adult male albino rats. The peripheral blood sample was obtained by clipping the tip of the tail and using the free-flowing blood. The heart blood was taken by cardiac puncture immediately after stunning the rat with a blow on the head. Total white cell counts were made on the blood sample. In order to ascertain any possible alteration in blood concentration as a result of the head blow, determinations were also made on the red cell numbers

TABLE 1

(Average of 10 animals)

	Peripheral	Heart
White cell numbers/mm³	23,810	6,425
Red cell numbers/mm³	8,967,000	8,790,000
Specific gravity of blood	1.0529	1.0526

and the specific gravity of the blood. The blood cell counts were made by use of standard dilution pipettes, diluting fluids, and hemocytometers. The specific gravity of the blood was determined by the copper sulfate method of Phillips, *et al.* (*4*). The results are summarized in Table 1.

It is clear from the data in Table 1 that, while the red cell numbers and density of the blood taken from the tail and heart are of the same value, there is a marked difference in the white cell count. This shows that the blood from the two sources is of uniform concentration and that the low white count of the heart blood is not due to hemodilution. While it may be true that the extremely low leucocyte count obtained by Law and Heston (*6*) on the heart blood of mice was due in part to the anesthesia employed, there can now be no doubt as to the qualitative validity of their findings.

If this marked difference in the numbers of leucocytes in the peripheral and heart blood of mice and rats is true for mammals in general, researchers should take care that they compare blood samples from the same source only. It is suggested that there may be a significant clinical difference in the leucocyte count of blood taken from patients by venipuncture and that taken by pricking the finger or ear.

The high white cell numbers in the peripheral blood as contrasted with the very low numbers in the heart blood is probably concerned with the immunity functions of the leucocyte.

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Ultraviolet Light-Absorption of Alkali-treated Solutions of Carbohydrates

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The production of light-absorbing substances by the action of alkali on carbohydrates has long been recognized. A study of the ultraviolet absorption spectra of some carbohydrates has been made by Gabryelski and Marchlewski (*1*).

We found that similar absorption was produced when starch or starch fractions were dispersed in alkali and heated. Since amylose gave much more absorption than amylopectin, it was hoped that we had found an "end-group" determination which would be a direct function

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