Radiation and Environmental Surveys

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OPINION

ASSESSMENT:

2005 Research Report:

Study of Effect of the AIRES Fractal Resonator on the State of Erythrocytes in Human Blood

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The purpose of this research is to determine the nature of the effect of ***Aires*** resonator on the functional state of erythrocytes. Erythrocytes are red blood cells, whose function is to pick up inhaled oxygen from the lungs and transport it to the lungs for exhalation. Owing to their sensitivity to changes occurring in the body, these red blood cells are considered to appropriate for evaluating physiological status.

Blood samples were from patients diagnosed with multiple myeloma, an incurable, but treatable, blood cancer.[1] This is a cancer that is rising steadily. It is caused not only by marrow failure and bone disorder, but also by the tumor producing a specific monoclonal immunoglobulin or its enzymes. Multiple myeloma is known as a "disease of advanced age" (patients' average age is 62 years); patients under 40 make up 2 to 3%, and 80-year-olds get sick 10 times as often as 50-year-olds. The median survival is approximately 50 months.

According to the clinic of the **Russian Research Institute of Hematology and Transfusiology**, life expectancy of multiple myeloma patients has steadily increased over the last 25 years and today is approximately 5 years on the average in the Russian Federation. [2]

To determine the effect of the ***Aires*** resonator on red blood cells, two classical methods were performed:

- ***Osmotic Fragility Test***
- ***Laser Diffraction Analysis***

Essentially, these research methods are to show: the ability of the blood to filter and absorb water ions and other essentials into the circulatory system and the level of pressure and/or time to do so. So, if the Aires resonator can enhance normalcy of the red blood cell function.

The fact that two different approaches to determine the possible effects of the ***Aires*** resonator were applied is significant. This supplementary monitoring allays possible argument that could have resulted from interpretations from laser diffraction analysis alone, which may sometimes, alone, lead of a misinterpretation, since such measurements are only indirect with laser technology and are susceptible to incompleteness of interpretation. The Osmotic Fragility Test ascertains monitoring.

Below left: ***Shape of Red Blood Cells****. Erythrocytes are biconcave discs with very shallow centers. This shape optimizes the ratio of surface area to volume, facilitating gas exchange. It also enables them to fold up as they move through narrow blood vessels. Below Right:* ***Process of swelling transformations*** *of red blood cells till their rupture (*Hemolysis*) as a result of the introduction of a stressor that creates osmotic pressure: distilled water.*

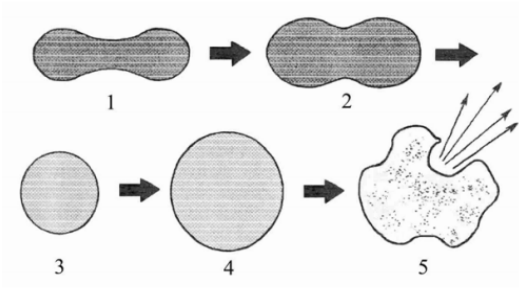

Fig. 1. *Erythrocyte transformation in hypoosmotic swelling:*

1 – discocyte; 2 – discocyte swelling; 3 – transformation of erythrocyte into spherocyte; 4 – spherocyte swelling; 5 – hemolysis

[1] In Canada, the 5-year survival rate for people with multiple myeloma is about 50%. For the 5% of people who are diagnosed at an early stage, the 5-year survival rate is 71%. If the cancer has spread to a distant part of the body, the 5-year survival rate is 48%.

[2] Bessmeltsev, S., K.m. Abdukadyrov. **Multiple myeloma.** Saint Petersburg: Dialect Publishing, 2004, 448 s. [In Russian] Original title: **Бессмельцев** С.С., Абдукадыров К.М. Множественная миелома «Издательство «Диалект», 2004, - 448 с.

Below is an explanation of the role of red blood cell osmotic pressure. To properly undergo through the process of filtration and re-absorption, the red blood cells must be sufficiently deformable and have the elasticity of appropriate shape (geometry) to eject and absorb throughout the capillary regime by swelling and deflating, even under stress, to release ions of hydrogen and oxygen, amino acids, proteins and glucose, and absorb carbon dioxide and wastes, without breaking up.

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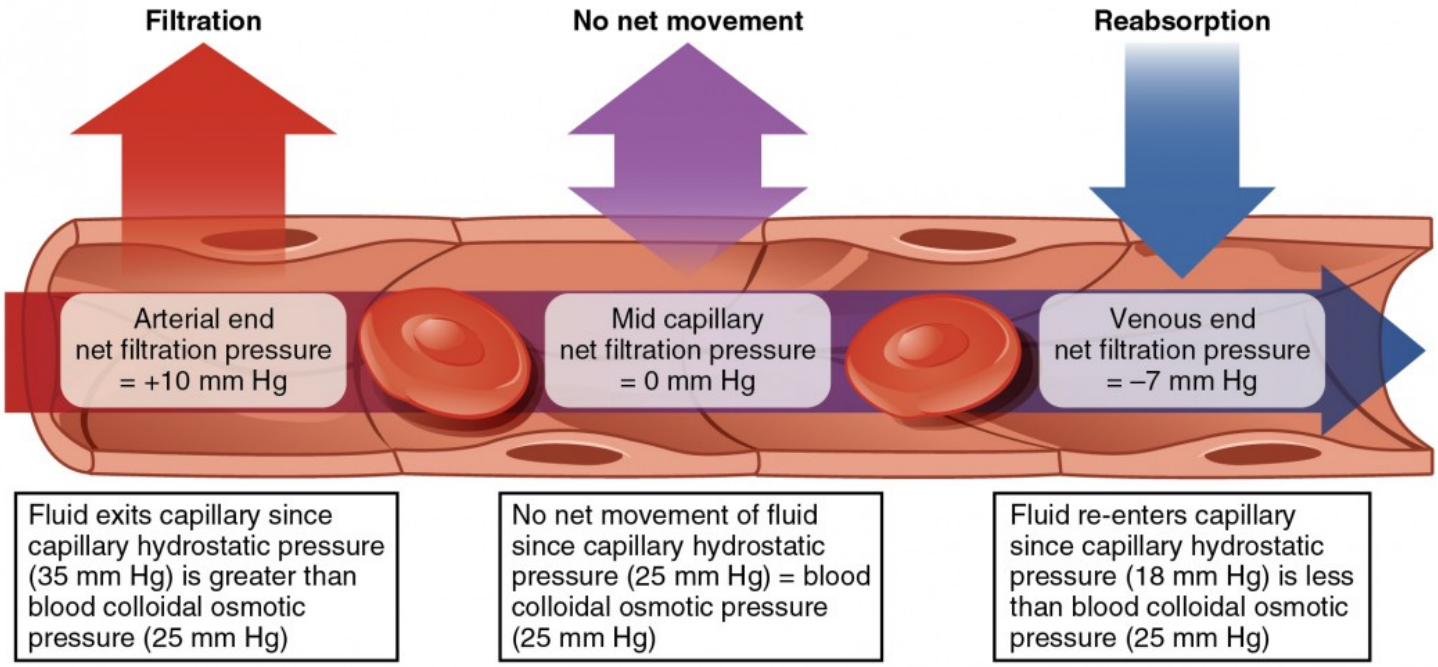


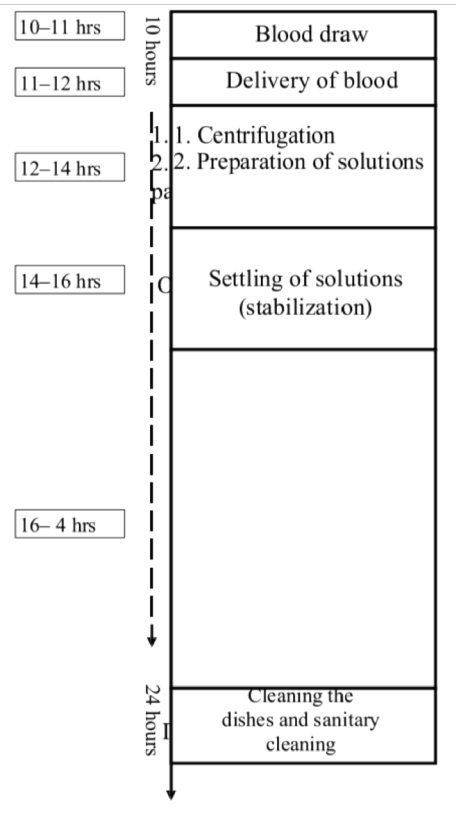
Osmotic Fragility Test

In studies of the flow of complex liquids or the deformation of soft solids, blood can be treated as liquid media that contains particles of different shapes, sizes and properties. The parameters which describe the most important properties of blood are viscosity (level of resistance to flow), aggregation and erythrocytes deformability (ED), or the ability of the red blood cells to change shape under a given level of stress without rupturing.

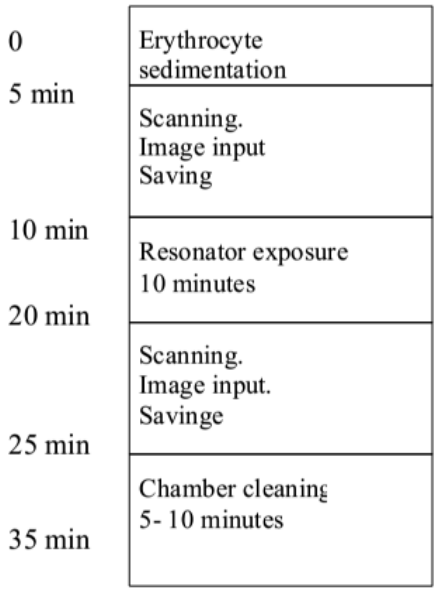
What the research undertook to verify was whether red blood cells, indicate greater flexibility under the presence of an **Aires** Resonator, with meaningful comparisons, utilizing the same qualitative approach, using an appropriate blood-sampling protocol, as well as case-by-case documentation of the amplitude of relative red blood cell radius change during swelling, which is duly described in the report.

Supplementary Laser Diffraction Analysis

This is a commonly preferred (and a fairly direct) method for measuring deformability. Having the two methods assures accuracy of assessment of the efficacy of the Aires resonator, especially over time, which is relevant, since the resonator acts continuously over the duration of exposure to its resonance feature. It is also helpful to monitor even minute changes associated with monolayer exposure individuals' red blood cells to an ***Aires*** resonator at intervals of 10 minutes in a special chamber in a single He-Ne laser scattering.



Timeline per blood sample



***Aires** resonator 10-minute exposure timeline*

Both experimental phases showed that external influence from the external influence from the resonator displays a positive trend. It is significant that a clear trend for improvement is associated with increased time of exposure to the ***Aires*** resonator, when exposure timing was extended for individual cases.

However, the report notes that it is still too early to determine optimal Aires resonator exposure time (in view of the small number of experiments – 10 patients, over 9 tests, during more than 2 months of observation).

Note that the ***Aires*** device was placed in close contact, that is, adjacent to the blood samples, which is not the position of a potential user for such units; however, this is a narrowing procedure to ascertain the actual process at play that delivers the trend of beneficial results.

In view of the results obtained, we suggest that real-time observation be conducted on individuals attached to heart monitors; we suspect that the monitors should indicate instant indications on the simple contact of individuals with the ***Aires*** resonators, *in vivo*, probably with a variety of positive trends, in addition to confirmation of the ameliorated adaptability of red blood cells towards their functional optimization along the capillary system.

This study is encouraging as an indicator of promising normalization of blood samples activated by an external influence of the Aires resonator technology.

This is a significant benefit arising from the advanced ***Aires*** technology.

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