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The Magnetic Mobility of Biomolecule Sanals of the Lymphatic Primo Vascular System

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The magnetic properties for sanal's mobility inside of the lymphatic primo vascular system, the so-called Kyun-grak (or meridian) system, are investigated under a low static magnetic field with the anatomy technology and optical microscope. One sanal with a size of 1 μm under microscope selected and separated from the primo vessels of the primo vascular system are observed in rabbits' lymphatic vessels around abdominal aorta and placed in PBS solution with petridish. The moving displacement of sanal versus the measuring time of 20 Oe below a magnetic field of 80 Oe is stronger in dominanting dependence according to the x-direction than y-direction.

Keywords : sanal, primo vascular system (PVS), primo vessel, magnetic field, mobility, lymph node, Alcian blue

1. Introduction

In the history of medical developments, discoveries of the new circulating systems as blood vessel system and lymphatic system changed the basic paradigm of medicines. Investigations of controllers for the autonomic nervous system of the human body led to the new approach on hormone system with regards to occurrence and disease treatments [1-3]. If undisclosed structures and functions of the third circulating system are revealed, an important research can lead to a medical revolution of a more destructive power than previous discoveries [4, 5]. In the perspective that the substance of pipe in which the path of spirit exists, it is widely known that the most important two things to the human body are spirit and blood. The blood supplies fresh air and sufficient nutrients to cells wandering around our body within the blood vessels.

The oriental medicine relating biomolecule sanals became known to the western medicine thus, scientists have been trying to find the meridian system continuously [6-8]. However, proven results on the substance of meridian system have not yet been found. But, the American orthopedist R. Becker's theory and British doctor M.W. Ho's theory have been widely applied. Such flow of electrons flows through the skin of peripheral nerves. The cortical nerves perform like a semiconductor which facilitates electron flows. In human body, there are many kinds of proteins such as collagen, DNA, and cell membrane [3, 4]. Through the combination of water and such elements, particular constructers can be formed. Through this liquid crystal, the bio-photon circulates [1]. In other words, bio-photon is applied to spirit and the liquid crystal is applied to meridian system. Thus, the pipe-like structure through the spirit is not needed, and the liquid crystal structure is unable to observe dead tissues, but able to detect live tissues [8, 9].

Generally, the meridian system is not a passage flowing minute energy; it is just one of the extended lines, which is linked to the index to stimulate meridian points effectively. In the future, in order to investigate the substance of meridian system that is germane to the bio-molecular sanal, the study for basic properties of sanal has to be investigated further and reinvented by scientific tools [10, 11]. From a medium to longer term of viewpoint, an in-depth scientific research will be necessary for oriental and molecular biological sides to study magnetic characteristics among basic properties of accomplished sanal of bio-molecule [12, 13].

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This research is obtained by sanal's substance of primo vascular system around rabbit's abdominal aorta which is the circulating meridian system [14, 15]. The microcells in the circulating system are reported by pictures from an optical microscope. The sanals with about 1.0 μm [16] are acquired anatomical technologies and observed the characteristics of below 80 Oe of magnetic field. The magneto-static field's effects among the properties of the sanal's mobility are analyzed in this experiment.

2. Experimental Method

For laboratory animal tests, New Zealand white female rabbits (approximately 2 kg each) were provided by Nara-Biotech Animal Company (Seoul, Korea). The rabbits were kept at constant temperature and humidity condition (23 °C, relative humidity 60%), and in periodical 12-hour light-dark cycles. All animals fasted to food and water for 1 day before anatomy. We confirmed all procedures with experiment animal's ethical regulations constituted by institutional regulation board of Sangji University.

Rabbits used in anatomical experiment was under anesthetics to inject 1.5 g/kg of intraperitoneal urethane or zolitel into the peritoneum. The adipose surrounding the inferior vena cava was separated and removed. Next, inside the inferior vena cava, PVSs stained blue were visualized [1, 2]. Alcian blue solution was prepared from 0.1 g Alcian blue (Sigma, St Louis, MO, USA) in 10 ml phosphate-buffered saline (PBS, pH 7.4) and filtered by 0.2 μm membrane filter (Merk Millipore, Darmstadt, Germany) with syringe (BD, Franklin Lakes, NJ, USA). After the abdominal sides of rabbits were incised, Alcian blue solution preheated at 37 °C water bath was injected into a lymph vessel or node.

Fig. 1(a) and Fig. 1(b) shows the rabbit lymph nodes before Alcian blue injections and a strand-like micro tubular PVS stained with Alcian blue floating inside a lymph vessel, respectively. The captured photographs show active PVS vessels on the rabbit respiration. 200 μl of Alcian blue solution was injected into a lymph node, for visualization of the PVS vessels in situ [4, 5, 14, 15]. The picture of Fig. 1(c) shows lifted and separated a primo vessel (a dia. of 30 μm and length of 3 mm) stained by Alcian blue using two tweezers. Thickness of the vessel increases through the tweezers downwards, and indicates plentiful sanal in the primo node. Many sanals have the size of 1 μm in node or corpuscle, and we divided the primo vessel from organs by selecting a primo node with minute scissors. The uncombined sanal shapes from breaking the truncated surface of primo nodes were originally about 1 μm in size as Fig. 2. Sometimes, several elliptical sanals are also being observed [13, 14]. There are sanals are composed of sanalplasm, sanalsom, and sanal-membrane, in the left side of Fig. 2.

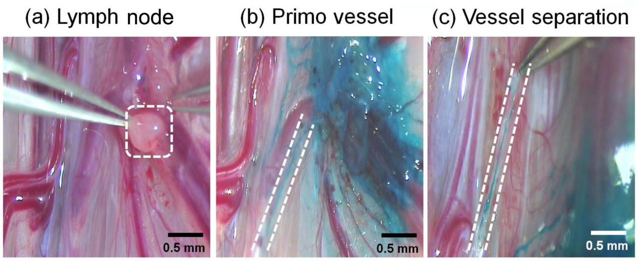

Fig. 1. (Color online) Three photographs of the primo vessel and node of the real primo vascular system (a) lymph of the rabbit with Alcian blue injection and (b) a strand-like micro tubular PVS stained with Alcian blue floating inside a lymph vessel. (c) PVS's vessel separated from lymphatic node and vessel by two tweezers. The bold white dotted lines displayed (a) lymph node, (b) primo vessel, and (c) isolated primo vessel.

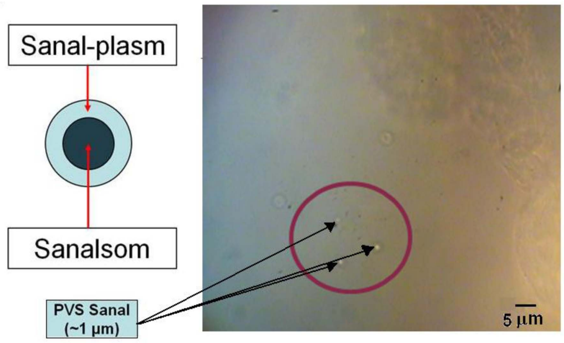

Fig. 2. (Color online) The structure, size, and features of microcells so-called "sanals" obtained from the primo vessel and node of the real primo vascular system inside the rabbits' lymphatic vessels around abdominal aorta. A sanal is composed of sanalplasm, sanalsom, and sanal-membrane.

3. Results and Discussion

Sanal's structure of about 1 μm in diameter is identified as the focal distance of an object lens in an optical microscope in 800-1000 times changing minutely. In order to observe the motion of stop, rotation, and translation for sanal that is filled with PBS sloppily, the experimental system could be set with one electromagnet which provided low or high magnetic fields. Especially, under low magnetic fields of 100 Oe with each step of 10 Oe, the magnetic characteristic by shape of sanal and the magnetic direction is found through the effect of magnetic anisotropy that depends on the vertical and horizontal magnetic directions approves the spin direction of gyroscopic sanal.

Under low magnetic field of 100 Oe, the characteristic of minute gyroscopic changes in sanal is investigated to inquire the effect of magnetic anisotropy which depends on the vertical and horizontal magnetic directions that approves with the motion direction of gyroscopic sanal. Through this, we have tried to observe the motion changes of sanal; stop, rotation, and translation. These are necessary components to research kinematic characteristics of sanal which changes magnetic fields when investigating magnetic characteristics under low magnetic field directions. Based on such facts, further studies on separating the sanal includes the motions of stop, rotation, and translation on the spin rotary motions and position changes of sanal at constant high magnetic fields of 1 kOe-10 kOe.

The picture in Fig. 3 shows outer licensing magnetic field's electromagnet, the coil and the actual sample of plate includes the sanals in node that separates the primo vessel after putting PBS into petridish which is the middle stage of the optical microscope. By maintaining the constant temperature in the range of 27 °C-50 °C, an important sample component, the measurement system is experimented by the acrylic case made by the Kokensha Engineering Company which automatically regulates temperature and humidity. To observe sanal's motion on petridish containing PBS, the observing condition is maintained as 500 ms/60 frames through computer video captures and image analysis from Image Pro Plus model with using the model of OlympusIX71 DIC which is the reverse of an optical microscope. As marked in the upper right of Fig. 3, the dependence of sanal's motion by the direction of magnetic field with setting x and y axis crosses at the direction of outer magnetic fields from electromagnet.

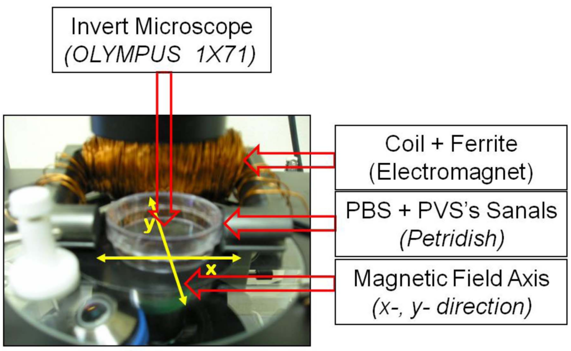

Fig. 3. (Color online) Schematic and real photograph of a sanals' motion measuring system included an electromagnet, an inverted microscope, and a petridish dipping PBS plus PVS's sanals. The x-axis and y-axis marked in photograph are parallel and perpendicular to the applied magnetic field, respectively. An experimental temperature, an observation condition, and a motion imaging analysis program are 38 °C, 500 ms/60 frames, and Image Pro Plus, respectively.

Meanwhile, the biological effects on human or animal body of magnetic field excerpted from ancient literature show the following. (1) The influence on cardiovascular is reducing blood pressures and cardiac outputs of healthy person and there is no changes for heart rate. After removing the magnetism, the cardiovascular will be recovered to normal state generally five minutes later. (2) Such influence on the blood clotting system is in the positive range of 500 Oe and 30 minutes. The outer field expedites invigoration of blood coagulation factors by annealing the outbursts of some enzymes which is the initial step of endogenous blood coagulations or increases active blood clotting functions for a complex of blood coagulation factors. However, it does not cause blood clotting states or problems. (3) The cut agglutination influences rapidly, expedites concubine of swelling, improves bad circulation, and increases the agglutination of fractures. (4) In such case, sleep is expedited and set as 150 Oe, 0.1 ms for rise time, and 0.6 s for fall time, outer magnetic field expedites sleep and improves sleeping hours, and tired and murky feelings are experienced upon awakening. (5) For an influence on external viscosity of the whole blood, the descending is from magnetostatic field of 1000 Oe. (6) For an influence on the blood sedimentation rate, the blood sedimentation rate is faster with an increase of magnetic field strength and advances at the beginning of sedimentation time. When applying a magnetic field of 1500 Oe for 40 minutes, there was a significant difference when comparing with control group. (7) The external thrombopoiesis influences the expediting thrombopoiesis. (8) The red corpuscle deformation rate increases significantly when a magnetic field of 2000 Oe-1000 Oe is applied. (9) For influences on body texture blood flow rates, especially when there is very definite meaning as the 500 Oe-2000 Oe is applied, a speed of bloodstream is the fastest at 1000 Oe. (10) If the value is determined as 61.8 Oe, 10 Hz, and 50 for coefficient of pulse duty, the optimal relax hypnosis effects are achieved.

By placing sanals on the petridish in PBS set on the electromagnet, we can observe the individual motion behaviors of sanals by using Image Pro Plus with 500 ms/60 frames. If the outer magnetic fields did not exist previously, sanals in PBS will be moving randomly. As Fig. 3 indicates, a vertical direction crossing the x-axis of motion is parallel to the outer magnetic field set of the y-axis. Under each of the distinguished magnetic field, detailed statistical transaction for data is needed but with the increase of magnetic field of 20 Oe from 0 Oe to 80 Oe, we can identify that the x-axis direction has a definite tendency which decreases the velocity of motion, as shown in Fig. 4(a). A bold elliptical dotted line in Fig. 4(a) is

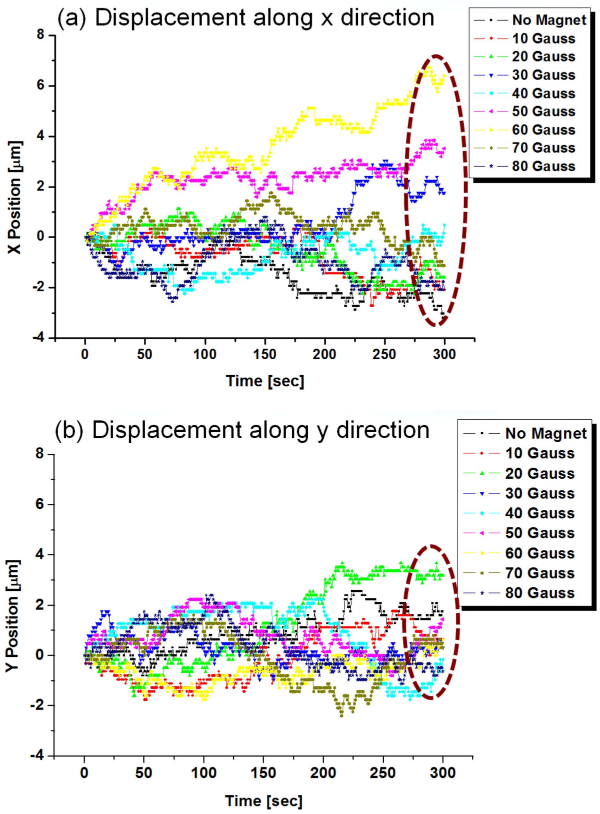

Fig. 4. (Color online) Analysis of one sanal's moving velocities along the direction of magnetic field (x-direction) (a) and perpendicular to the direction of magnetic field (y-direction) (b) under the low magnetic field of 0 Oe, 20 Oe, 40 Oe, 60 Oe, and 80 Oe, respectively. A bold elliptical dotted line in two graphs displacements along (a) x and (b) y directions versus moving time during 300 s are shown as two major tendencies for variation of sanal's moving velocity, respectively.

indicates the line which draws a final displacement variation of sanal's motion velocity when the outer magnetic field is 0 Oe and 80 Oe during 300 s. The variation of displacement along x direction is about 11 μm.

On the other hand, in the case of sanal's motion by direction of y-axis, the change of increase and decrease is jarred in wide widths by an increase of 20 Oe each, thus the similar random motions to the moment of nonexistent outer magnetic fields without tendency can be observed. A long dotted thick elliptical line in Fig. 4(a) indicates the line which draws a final displacement variation of sanal's motion velocity when the outer magnetic field is 0 Oe and 80 Oe during 300 s. The variation of displacement along the y direction is about 5.5 μm. It is half the value of sanal's moving displacement along the direction of y-axis. From these experimental results, the sanal's mobility inside the PVS is more dependent on the one parallel to the low magnetic field than the perpendicular one.

4. Conclusion

The motion features of sanals inside the primo vascular system, that is so-called the Kyungrak system, are investigated under a low static magnetic field of 100 Oe by using the anatomy technology and optical microscope. The sanals with a size of about 1 μm separated and selected from the primo vessels of the primo vascular system are observed in rabbits' lymphatic nodes around abdominal aorta and dipped with PBS liquid inside of petridish. The sanal's moving displacements along x and y directions versus measuring time of 300 s under a low magnetic field of 80 Oe are shown with two major tendencies for variations of sanal's moving velocity with a variation of 11 μm and 5.5 ìm, respectively. It implies that the sanal's mobility inside the PVS is strongly dependent on the parallel one of the low magnetic field than the perpendicular one.

Acknowledgments

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