

# Live Blood Analysis (LBA) Test Report

|                                |  |
|--------------------------------|--|
| <b>Patient's Name</b>          |  |
| <b>Patient's Reference No.</b> |  |
| <b>Date of Analysis</b>        |  |

## Explanation of the LBA Test

### Live Blood Analysis Method

A drop of peripheral blood is extracted from the patient's fingertip. The blood sample is immediately placed between a microscope slide and cover slip, mounted onto a darkfield microscope and viewed in its living state without stains or fixatives.

The purpose of this test is to screen the blood for thrombocyte/platelet activity, fibrin and micro-clots. Other indications which can be seen in the live blood sample, such as abnormal red and white blood cells, will be noted if present.

A dry blood sample is also taken and assessed. This can show a variety of other indications relating to toxicity, inflammation, oxidative stress, mineral imbalance and microbiome dysbiosis.

### Normal Blood Appearance

In darkfield microscopy the blood sample is illuminated to reveal the fine structures such as membranes, biomolecules (containing proteins & fats) and other chemical elements. These elements within the blood sample appear bright white. The blood plasma, the erythrocyte cytoplasm and granulocyte nucleus all appear black.

Normal red blood cells appear round and are between 6 to 8 microns in size. The white blood cells have different appearances depending on type and state and there are far fewer of them than red blood cells.

#### Thrombocytes/platelets

It is normal for the blood plasma to contain a small number of thrombocytes. They are typically 1.5 microns in size (about a quarter of the size of a red blood cell), they have a white fuzzy appearance and normal levels are considered to be 3 to 5 thrombocytes per 100 red blood cells.

#### Fibrin

Fibrin is a product of the clotting cascade and is created through the conversion of fibrinogen (another chemical that circulates in the blood) to fibrin (which happens in the liver). Fibrin is a tough, fibrous string of protein and is usually found in the blood when there has been damage within the circulatory system. Fibrin's main purpose is to prevent blood loss by forming a mesh over a wound.

In normal blood, under the microscope, you would not see fibrin because the body produces a specific protein degrading enzyme which dissolves fibrin to maintain blood homeostasis. This is essential because fibrin is congestive to blood circulation, making the blood more viscous.

#### Monocytes

Monocytes are a specific white blood cell that circulate in the blood and are the largest of the white blood cells (12 to 18 microns). They migrate from the blood into the tissues where they become macrophages. They are capable of ingesting (phagocytosing) large bacteria, medium sized parasites, viruses and virally-loaded cells (dead or alive) as well as clearing up decomposing cellular debris. It is normal to see between two and eight monocytes in a blood sample.

Monocyte production is increased during inflammatory processes in the body. Their appearance changes once they are activated; they tend to increase in size, can appear dendritic and contain granules in the cytoplasm and/or nucleus.

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| Patient's Name |  |
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## Thrombocytes/Platelets Assessment

### Scoring Guide

The blood sample was scanned to assess the size, appearance and amount of thrombocytes/platelets.

- **Thrombocyte/platelets - normal:** no activated, aggregated thrombocytes/platelets and no micro-clots.
- **Thrombocyte/platelet activation and aggregation:** this will be divided into sizes, small (generally half the size of a red blood cell), medium (generally the size of a red blood cell) and large (larger than a red blood cell). They will also be assessed by frequency of occurrence on a scale of 1 to 5, 1 being rare and 5 being very common.
- **Micro-clots:** specific type of thrombocyte/platelet aggregation – these will be noted as present or not present. When present the frequency of occurrence will be expressed on a scale of 1 to 5, 1 being rare and 5 being very common.

### Patient's Results

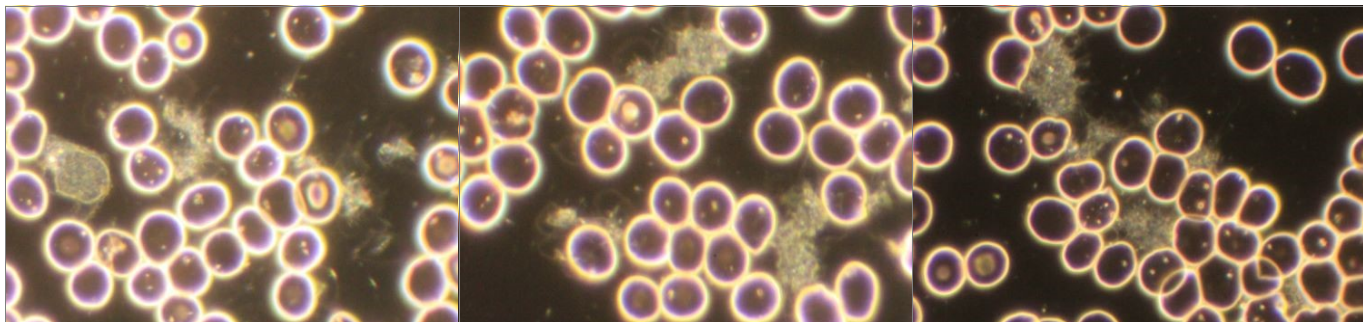
Thrombocyte/platelets – normal

|     |    |
|-----|----|
| YES | NO |
|-----|----|

Thrombocyte/platelet activation and aggregation

|        |   |   |   |   |   |
|--------|---|---|---|---|---|
| Small  | 1 | 2 | 3 | 4 | 5 |
| Medium | 1 | 2 | 3 | 4 | 5 |
| Large  | 1 | 2 | 3 | 4 | 5 |

### Micrographs of Patient's Blood Showing Thrombocytes/Platelets



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| Patient's Name |  |
|----------------|--|

## Thrombocytes/Platelets Assessment (Cont /.)

### Patient's Results

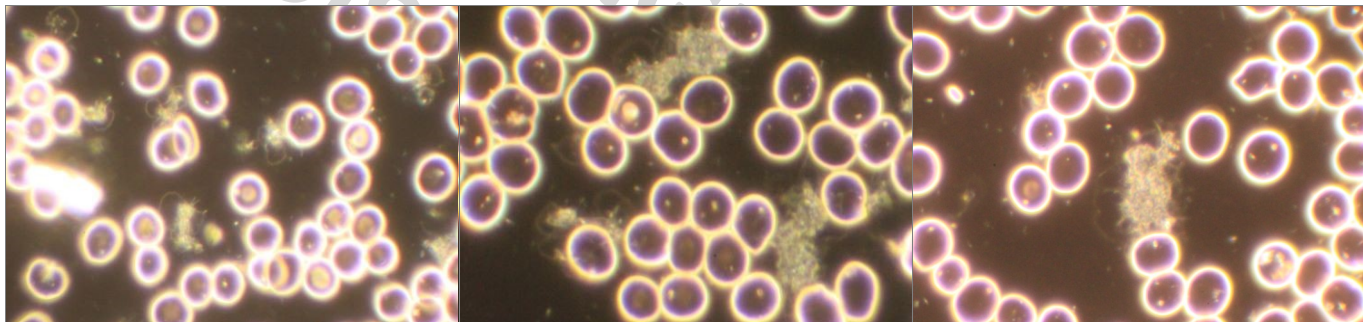
Micro-clots

|     |    |
|-----|----|
| YES | NO |
|-----|----|

Concentration Scale

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

### Micrographs of Patient's Blood Showing Micro-clots



### Analysts Notes on Thrombocyte/Platelet Assessment

When thrombocytes/platelets are activated and aggregated they release chemicals and trigger a cascade of reactions in the blood. The size of the aggregations can be disruptive to optimal circulation and can pose a cardiovascular risk.

Their presence indicates a variety of biochemical reactions in the body including inflammation, endothelial dysfunction, exposure to bacterial/viral/parasitic endotoxins, oxidative stress, adrenalin stress and, depending on size, can pose a significant cardiovascular risk.

Micro-clots have a very distinctive appearance. They are thrombocytes that have activated and have developed a fine expanded membrane around the structure. This membrane is much finer and harder to see than any other blood structure. If present they need further investigation and treatment.

**XXXX's blood plasma contained a large amount of thrombocyte aggregations. They were mostly medium sized (twice the size of red blood cell). A lot of them were actually large micro-clots that have the typical expanded membrane around the thrombocyte structure. There were many smaller micro-clots as you can see in the first picture above.**

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| Patient's Name |  |
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## Fibrin Assessment

### Scoring Guide

- If fibrin appears within the first 12 minutes it is considered clinically relevant.
- Fibrin's presence can be weak or strong. It is scored on a scale between 1 and 10, 1 being a weak presence and 10 being an extremely strong presence.

### Patient's Results

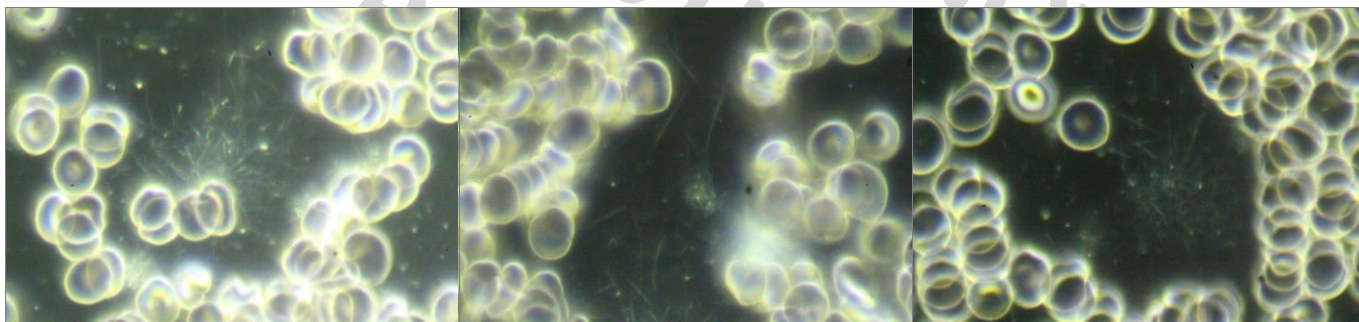
Fibrin present in first 12 minutes

|     |    |
|-----|----|
| YES | NO |
|-----|----|

Fibrin levels in plasma

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

### Micrographs of Patient's Blood Showing Fibrin



### Analyst's Notes on Fibrin Assessment

Fibrin causes viscosity in the blood which can reduce the blood's ability to circulate optimally and feed the cells, organs and tissues with oxygen, nutrients, and signalling molecules.

Fibrin in the sample always indicates that there is some disruption to the blood coagulation homeostasis and that there is an inflammatory process ongoing.

Fibrin is formed from fibrinogen, an acute phase protein (APP). APPs are produced by the liver in response to inflammatory cytokines (IL-1, IL-6 and TNF) as part of immune defence known as acute phase response (APR). Lipopolysaccharides (LPS) from bacterial walls, stimulate the production of the APRs.

Fibrin can also indicate liver stress and so it may be necessary to test liver enzymes (ALT, AST). The cause of the liver stress needs investigation too (toxic load, viral infection damage, for example).

**XXXX's blood contained a lot of fibrin. It was mostly fine fibrin throughout the plasma which also wrapped around red blood cells creating cloud cells in places. There were several areas of dense fibrin—like the first picture. Along with the toxic load seen in dry blood (page 6) check liver health.**

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| Patient's Name |  |
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## Monocyte Assessment

### Scoring Guide

The blood sample was scanned and assessed for three monocyte references.

- Normal monocytes
- Higher than normal presence of monocytes
- Presence of activated monocytes/macrophages

### Patient's Results

Normal monocytes

|     |    |
|-----|----|
| YES | NO |
|-----|----|

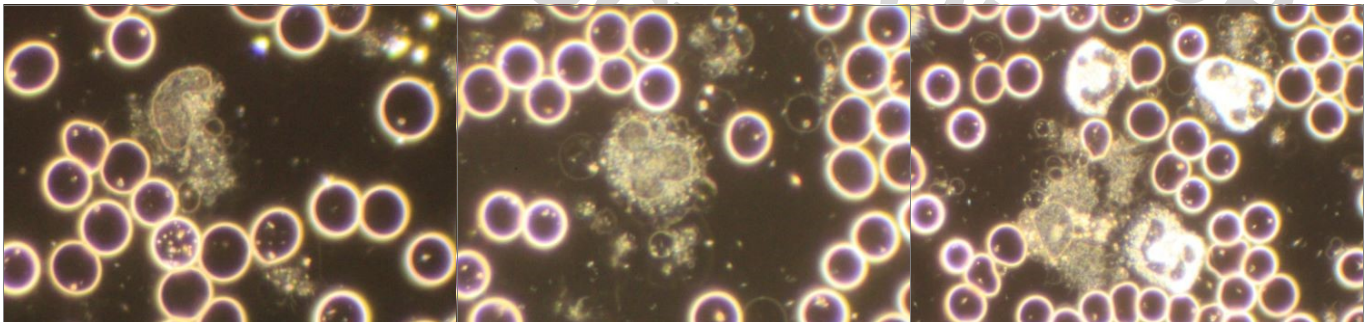
Higher than normal monocytes

|     |    |
|-----|----|
| YES | NO |
|-----|----|

Activated monocytes/macrophages

|     |    |
|-----|----|
| YES | NO |
|-----|----|

### Micrographs of Patient's Blood Showing Monocytes/Macrophages



### Analyst's Notes on Monocyte Assessment

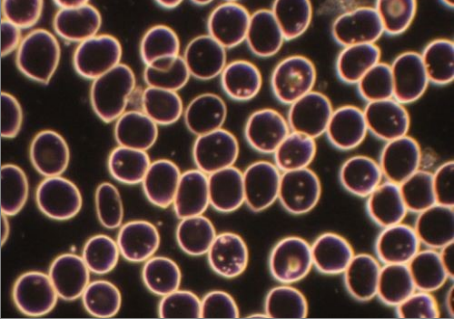
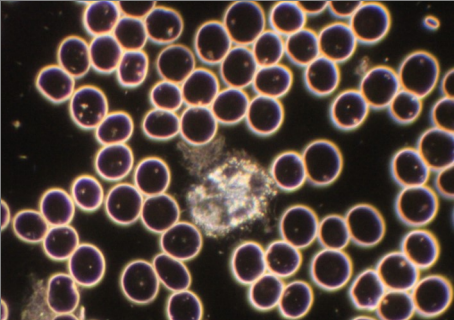
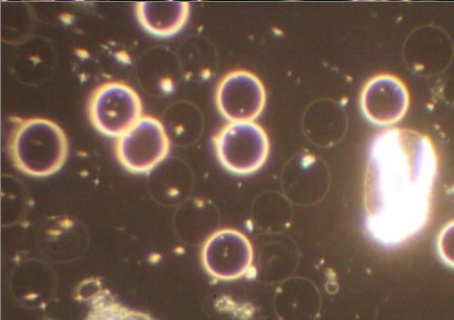
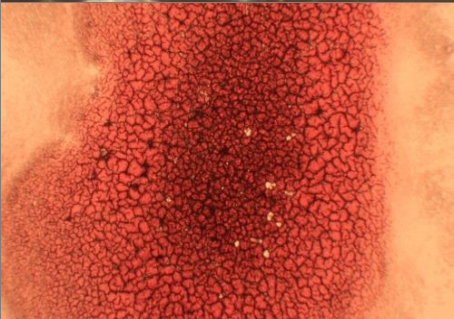
Monocytes release inflammatory chemicals and their production is increased for several reasons in response to the presence of a viral, fungal or parasitic pathogen and are part of an acute or chronic inflammatory response.

Further investigation may be needed to detect which type of monocytes are present (non-classical etc) to know the cause of their presence.

**XXXX's blood sample contained a higher than normal amount of monocytes and they were all activated/cytotoxic/apoptic. They were releasing cytoplasm contents into plasma and some were dendritic and vesicular. Highly active monocytes.**

Patient's Name

## Other Indications seen in Live Blood & Dry Blood

| Micrograph                                                                          | Indication                                                                                                                                                                                                                                                                                | Comments                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>Nearly all of the rbc's in this picture have inclusions in them. It is not possible to determine the qualities of these inclusions using darkfield. They can be a variety of things such as Heinz bodies, reticulocytes, pappenheimer bodies, Howell jolly bodies.</p>                 | <p>The inclusions were motile. They ranged in size and some were brighter than others. The larger inclusions were donut shaped. I believe this should be investigated further in order to identify what these are and what may be causing them.</p>                                                                                        |
|   | <p>This picture illustrates the different sized red blood cells in the sample. The large ones, macrocytes, the small ones microcytes. There were also a number of oval shaped cells, ovalocytes. All have B12, folic acid, iron and essential fatty acid deficiency as the cause.</p>     | <p>There were more macrocytes than the other anisocytes indicating a primarily B12 nutrient deficiency. Check the diet for B12 content, check digestion capacity to be able to absorb it and supplement if necessary. Anisocytes were at around 25% of blood sample.</p>                                                                   |
|  | <p>This picture illustrates the lack of red blood cells. Throughout the sample there was a higher proportion of plasma than is normal, indicating that there may be a drop in erythropoiesis. You can also see "ghost cells" where the membrane has thinned or lysed.</p>                 | <p>Check red blood cell count and also check for hemolysis. Less viable red blood cells in circulation decreases oxygenation delivery and all of the knock on effects from that. This would cause quite strong fatigue, especially when added to the anisocytes present which also affect oxygenation.</p>                                 |
|  | <p>The black bulges in the picture appear due to the presence of particular chemicals produced by the interaction between parasitic pathogens in the body and the body's defenses to them. This alters the way the fibrin in the dry blood sample forms as it is drying and clotting.</p> | <p>XXXX's dry blood sample had a significant amount of this "parasite" indication. Correlate with the case history regarding health of the digestive tract and other symptoms such as skin health and any fungal conditions. Further testing may be helpful. Addressing hydration, pH balance and the microbiome will also be helpful.</p> |