3415A 3 Ave NW, Calgary, Alberta, T2N 0M4, Canada

Patient Name: Patient, Name
Specimen ID (SID): 24-123-123456
External SID: 123456789
Specimen Type: Plasma
DOB: 01-Jan-2000
Doctor: Dr. Doctor
Date/Time Collected: 01-Jan-2024 / 00:00
PHN: AB 0000000
Report Date: 11-Mar-2025
Specimen Source: Referral Lab
Reason for Testing: Long COVID
Relevant Medications: -

Long COVID Vascular Health Panel

Laboratory Developed Test (LDT)

Report Summary:

Sample Comments:

-

Results Summary:

High Analytes: Endothelin-1, FGF-1, HB-EGF, PLGF, SAA, sP-Selectin
Moderate High Analytes: VEGF-C

Results Interpretation:

These results indicate elevated levels of FGF-1, HB-EGF, and PLGF, with VEGF-C moderate high, which may suggest potential activation or dysregulation of angiogenesis. The high levels of SAA could reflect ongoing inflammation. Additionally, high levels of Endothelin-1 and sP-Selectin may indicate endothelial activation or dysfunction.

Disclaimer:

The interpretation of these test results should be correlated with clinical findings and other diagnostic tests. Biomarker levels can vary due to many biological, physiological, and diurnal factors; their clinical significance must be assessed by a qualified healthcare professional. This information is not intended to be used as the sole basis for diagnosis or treatment decisions.

Reviewed by: DP
Eve Technologies Corporation is a CLIA certified High Complexity International Laboratory

EVE DIAGNOSTICS
3415A 3 Ave NW, Calgary, Alberta, T2N 0M4, Canada

Patient, Name
PHN: AB 0000000; DOB: 01-Jan-2000; SID: 24-123-123456; External SID: 123456789

Long COVID Vascular Health Panel

Laboratory Developed Test (LDT)

Analyte	Results		Reference Interval†	Units
ANGIOGENESIS REGULATION BIOMARKERS				
Angiopoietin-2	1542		1100 - 11300	pg/ml
BMP9	9.0		0 - 414	pg/ml
Endoglin	595		198 - 3490	pg/ml
FGF-1*	173	**HIGH**	0 - 34.8	pg/ml
Follistatin	2534		338 - 4844	pg/ml
HB-EGF	52.0	**HIGH**	0 - 42.5	pg/ml
HGF	363		0 - 834	pg/ml
Leptin	25640		1080 - 135000	pg/ml
PLGF*	16.0	**HIGH**	0 - 6.9	pg/ml
VEGF-C	1095		0 - 1296	pg/ml
VEGF-D	162		0 - 667	pg/ml
ENDOTHELIAL ACTIVATION BIOMARKERS				
Endothelin-1	130	**HIGH**	0 - 75.1	pg/ml
sICAM-1	67.0		43 - 167	ng/ml
sVCAM-1	545		240 - 988	ng/ml
COAGULATION MARKERS				
D-Dimer	863		204 - 3769	ng/ml
sP-Selectin	129	**HIGH**	0 - 101	ng/ml
INFLAMMATION BIOMARKER				
SAA	21605	**HIGH**	482 - 11524	ng/ml

† Reference intervals estimated by data-mining ≥700 PLASMA samples drawn from both healthy and pathological subjects.
* Upper reference limit defined as the lower limit of quantification (LLOQ) for this analyte.

Long COVID Vascular Health Panel

ANGIOGENESIS REGULATION BIOMARKERS

These analytes serve as biomarkers of angiogenesis, reflecting the complex vascular responses observed in various stages of COVID-19, including long COVID. Elevated pro-angiogenic biomarkers in long COVID patients are thought to indicate a persistent wound healing response to ongoing vascular injury (1). **Endoglin**: Circulating levels of endoglin have been found to be significantly elevated in long COVID patients (2). **VEGF-D**: Persistently elevated circulating VEGF-D levels have been detected up to 6 months following recovery from acute COVID-19(3). **Angiopoietin-2 (Ang-2)**: Ang-2 levels have been found to correlate with disease severity during acute COVID-19. However, its role in long COVID appears more complex: some studies report reduced Ang-2 levels in long COVID patients compared to healthy controls, while others observe increased levels in patients with reduced lung diffusing capacity, suggesting context-dependent effects (4, 5). **Follistatin**: The expression of follistatin, an antagonist of activins, has been notably elevated in severe and lethal COVID-19 cases, pointing to a significant dysregulation of the activin-follistatin axis in severe disease (6).

COAGULATION MARKERS

These analytes are key markers associated with blood coagulation and hemostatic regulation. Abnormalities in coagulation pathways have been strongly implicated in the pathogenesis of both acute COVID-19 and long COVID (7). ADAMTS13: Reduced levels of **ADAMTS13** have been observed in long COVID patients. This reduction indicates a potential dysregulation of hemostasis, contributing to a pro-thrombotic state (8), although increased ADAMTS13 levels are observed during active coagulation. D-dimer: Elevated **D-dimer** levels have been consistently identified in both acute COVID-19 and long COVID (9). **P-selectin**: Increased levels of P-selectin have been linked to coagulopathy in both acute COVID-19 and long COVID (2).

ENDOTHELIAL ACTIVATION BIOMARKERS

These analytes are biomarkers associated with endothelial activation, a process that plays a crucial role in the vascular complications observed in both acute and long COVID. **Endothelin-1**: Elevated circulating levels of endothelin-1 have been observed in patients with acute COVID-19. Notably, these levels are further increased in patients with long COVID (9). Soluble ICAM-1 (**sICAM-1**): Evidence indicates that circulating levels of sICAM-1 are elevated in patients with long COVID (5). Soluble VCAM-1 (**sVCAM-1**): sVCAM-1 levels have been found to be significantly higher in individuals with acute COVID-19 compared to healthy controls, reflecting endothelial activation and inflammation (11).

INFLAMMATION BIOMARKER

Persistent inflammation is a hallmark of both acute COVID-19 and long COVID. Elevated levels of **SAA**, an acute-phase reactant that reflects heightened immune activation and is a key marker of the hyperinflammatory response, have been observed in patients with COVID-19, particularly in severe cases. Its persistently elevated levels may contribute to the ongoing inflammatory processes seen in both acute and long COVID (12).

References:

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