

# Point-of-Care Haemoglobin Detection for Anaemia Diagnosis

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Anaemia is a blood-related disease affecting people of all ages, genders, and ethnicities. It is caused by the reduction of the number of erythrocytes or haemoglobin concentration in blood, resulting in a deficiency in oxygen transport. Anaemia is often a symptom of other diseases, which can make its diagnosis difficult [1]. Anaemia can be classified into different phenotypic groups, such as: haemolytic, microcytic, macrocytic, hypochromic, and Iron Deficiency Anaemia (IDA), among others [2,3]. These have different causes and treatments and can be identified by measuring the levels of different biomarkers in patients' blood, such as haemoglobin (Hb) concentration, erythrocytes' physical parameters, serum iron and serum ferritin. Current methods for anaemia diagnosis rely on blood analysis and a complete haemogram. Herein, we are comparing two different strategies for the electrochemical detection of Hb based on nanotechnology: on one hand, the interaction between methylene blue (MB) and Hb and, on the other hand, the complexation of Hb with its aptamer. This detection methods could be used for developing a Point-of-Care (PoC) biosensor, which will be user-friendly, fast, and less invasive, requiring only a small drop of blood. Additionally, it could serve as a screening and monitoring tool for other disease states in which anaemia is a symptom.

## References

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