



MALMÖ UNIVERSITY



# Validation of a haemoglobin measuring method for determination of blood loss at oral and maxillofacial surgical treatment

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## ABSTRACT

**Background:** Determination of blood loss can be a crucial factor at surgical procedures, especially when the amount of blood is small and mixed with other fluids. The existing methods to measure this are still not supported with evidence enough.

**Aim:** To validate the accuracy of the HemoCue® system (HemoCue, Ängelholm, Sweden) at estimation of blood loss in a setup where blood is mixed with saline and saliva.

**Materials and methods:** The haemoglobin concentration of defibrinated horse blood was measured using the haematology analysers Hemocue® 201+ and Hemocue Plasma/Low Hb Photometer. Series of non-diluted blood (control) and blood diluted with saline and saliva (test) were conducted to mimic a clinical situation at oral and maxillofacial surgical treatment. Following each dilution, a new measurement of the haemoglobin concentration was performed using the appropriate haematology analyser to measure the blood loss.

**Results:** There were no statistically significant differences regarding the measured Hb concentration in relation to the degree of dilution. The accuracy of measured blood volume in the diluted and non-diluted blood (control) was within a level of  $\pm 11,5\%$ .

**Conclusion:** The measurement of haemoglobin concentrations in a mixture of blood, saline, and saliva, proved to be accurate when compared to non-diluted blood. It is suggested that the HemoCue® system can be applied in the field of oral and maxillofacial surgery to improve the accuracy of the blood loss measurement.