

# **Use of a water hardness test kit as a potential on-farm screening tool for hypocalcemia in dairy cattle**

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Short title: **water hardness test kit in the monitoring of hypocalcemia in dairy cattle**

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## Summary

This research paper aims to measure total blood calcium concentration with a water hardness test kit (WHTK) in dairy cattle and compare the results to a reference method.

The study was carried out on 107 Holstein Friesian cows from three commercial dairy farms in Sardinia (Italy).

Blood samples were collected  $\leq 7$  days from calving. Total serum calcium concentration was determined using a biochemical analyser and a WHTK.

The relationship between the laboratory results and the WHTK results was investigated using Spearman's rank correlation test and simple linear regression was determined. Sensitivity, specificity, negative and positive predictive values, intra and inter-assay CV were calculated.

The test values were highly correlated with the laboratory values ( $R^2 = 0.72$ ,  $P < 0.001$ ). Sensitivity and specificity were respectively of 88 % and 83 % for the WHTK. Intra and inter-assay CV were 7.3 % and 11.3 % respectively.

The WHTK was identified as a potential on-farm tool to monitoring early postpartum Ca concentrations at herd level.