



The PortaBHB™ Milk Ketone Test

A comparison with other methods

Subclinical ketosis is defined as abnormal concentrations of circulating ketone bodies in the absence of clinical signs of ketosis.¹ There are three types of ketones produced during ketosis: beta-hydroxybutyrate (BHB), Acetoacetate (AcAc) and Acetone (Ac). The gold standard diagnostic test for subclinical ketosis is the measurement of BHB in serum or plasma. This method is neither convenient nor cost-effective for on-farm use. Many on-farm tests check for acetoacetate (AcAc) using urine dipsticks or milk powders. Milk dipsticks test for BHB, the same compound as the lab standard method.

The literature indicates that the correlation between BHB values in milk and in blood is low (0.66).² Therefore, in comparing the various tests on the market, investigators look at sensitivity and specificity around certain cutoff values, instead of a direct correlation.

Various authors have established cutoff levels for subclinical ketosis. The most commonly used levels are 1400 µmol/L in blood and 200 µmol/L in milk, although values of 1200 µmol/L in blood and 100 µmol/L in milk are also used, depending on the application.^{1,3}

The PortaBHB™ Milk Ketone test is a dipstick that tests for BHB levels in milk. It compares closely to other milk BHB test strips on the market, but has the added advantage of lower price and room temperature stability.

Sensitivity, specificity, and price for ketosis tests currently available on the market are shown in the table below.

Product	Detection Level	Sensitivity	Specificity	Approximate Price (in the USA)
KetoCheck ¹ — (milk or urine) Powder, tests for AcAc	“moderate”	10%	100%	\$0.20/test
KetoStix ¹ — (urine) Dipstick, tests for AcAc	“moderate” 40 µmol/L	49%	99%	\$0.29/test
KetoTest [*] / KetoLac — (milk) Dipstick, tests for BHB	200 µmol/L	54% Range 45% – 88%	94% Range 63% – 97%	\$3.00/test
Precision Xtra ⁵ — (blood) Instrument with test strips, tests for BHB	1400 µmol/L	96%	97%	\$3.70/test
PortaBHB™ Milk Ketone Test** (milk) Dipstick, tests for BHB	200 µmol/L	75%	91%	\$1.75/test

Sensitivity/specificity defined at a serum BHB concentration of 1400 µmol/L.

High Sensitivity = few false negatives

High Specificity = few false positives

* Ketotest data represent pooled averages from many different published studies. The range represents the variation between the studies.

** PortaBHB data based on field study of 109 samples conducted by the New Jersey Agricultural and Experimental Station, Rutgers University (unpublished).

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Literature referenced:

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