

Supplementary Tables 1-10

Courtney, R.C., S.L. Taylor, J.L. Baumert. 2016. Evaluation of Commercial Milk-Specific Lateral Flow Devices. *J. Food Prot.* (submitted)

Abbreviations:

WPC34, whey protein concentrate, 34% protein.

WPC80, whey protein concentrate, 80% protein.

NaCas, sodium caseinate.

NFDM-LH, non-fat dry milk, low-heat processed.

MPC80, milk protein concentrate, 80% protein.

SUPPLEMENTAL TABLE 1. *Romer AgraStrip Total Milk kit*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	Pos (3/3)				
WPC80	Neg (0/3)	Pos (3/3)				
Sweet Whey	Neg (0/3)	Pos (3/3)				
Acid Whey	Neg (0/3)	Pos (3/3)				
NaCas	Neg (0/3)	Pos (3/3)				
NFDM	Neg (0/3)	Pos (3/3)				
MPC80	Neg (0/3)	Pos (3/3)				

^aThe result stated occurred two or more times within triplicate testing.

SUPPLEMENTAL TABLE 2. *Romer AgraStrip Casein kit*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (1/3)	Pos (3/3)	Pos (3/3)	f. pos ^b (3/3)	f. pos (3/3)	f. pos (3/3)
WPC80	f. pos (2/3)	Pos (2/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
Sweet Whey	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
Acid Whey	Neg (0/3)	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
NaCas	Neg (1/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
NFDM	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
MPC80	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)

^aThe result stated occurred two or more times within triplicate testing.

^bf. pos, faint positive.

SUPPLEMENTAL TABLE 3. *Romer AgraStrip BLG kit*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	f. pos ^b (3/3)	f. pos (3/3)	f. pos (2/3)	Neg (0/3)	Neg (0/3)
WPC80	Neg (0/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (2/3)	Neg (0/3)
Sweet Whey	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	f. pos (3/3)	+/- (3/3)
Acid Whey	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	+/- ^c (3/3)	+/- (3/3)
NaCas	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
NFDM	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
MPC80	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)

^aThe result stated occurred two or more times within triplicate testing.

^bf. pos, faint positive.

^c+/-, a very, very faint positive test line that may be interpreted differently by different users.

SUPPLEMENTAL TABLE 4. *Neogen Reveal Total Milk kit*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
WPC80	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
Sweet Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (1/3)	Neg (1/3)
Acid Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- ^b (2/3)	+/- (3/3)	+/- (3/3)
NaCas	Neg (0/3)	+/- (2/3)	+/- (3/3)	f. pos ^c (3/3)	Pos (3/3)	Pos (3/3)
NFDM	Neg (0/3)	+/- (3/3)	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
MPC80	Neg (0/3)	+/- (3/3)	f. pos (2/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)

^aThe result stated occurred two or more times within triplicate testing.

^b+/-, a very, very faint positive test line that may be interpreted differently by different users.

^cf. pos, faint positive.

SUPPLEMENTAL TABLE 5. *Neogen Reveal 3-D Total Milk*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
					O ^b : +/-	O: +/-
WPC80	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
					O: +/-	O: +/-
Sweet	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
Whey						O: +/-
Acid	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- ^d (3/3)	f. pos (3/3)	f. pos (3/3)
Whey					O faint but >T ^c	O faint but >T
NaCas	Neg (0/3)	f. pos ^e (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
				O≈T	O<T	O<T
NFDM	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
				O≈T	O<T	O<<T
MPC80	Neg (0/3)	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
			O >T	O≈T	O<<T	O<<T

^aThe result stated occurred two or more times within triplicate testing.

^bO, overload line. The upper detectable limit is described as the point when the overload line is less than or equal to the test line.

^cT, test line.

^d+/-, a very, very faint positive test line that may be interpreted differently by different users.

^ef. pos, faint positive.

SUPPLEMENTAL TABLE 6. *Bioavid diagnostics lateral flow milk*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	f. pos ^b (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)
WPC80	f. pos (2/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)
Sweet Whey	Neg (0/3)	Pos (3/3)	f. pos (3/3)	f. pos (2/3)	+/- ^c (2/3)	Neg (1/3)
Acid Whey	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (2/3)	f. pos (3/3)
NaCas	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
NFDM	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	f. pos (3/3)	+/- (3/3)
MPC80	+/- (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	f. pos (3/3)	+/- (3/3)

^aThe result stated occurred two or more times within triplicate testing.

^bf. pos, faint positive.

^c+/-, a very, very faint positive test line that may be interpreted differently by different users.

SUPPLEMENTAL TABLE 7. *Elution Technologies Bovine Total Milk*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
WPC80	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
Sweet Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (1/3)	Neg (0/3)	Neg (0/3)
Acid Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- ^b (2/3)	+/- (2/3)	+/- (3/3)
NaCas	Neg (0/3)	Neg (0/3)	+/- (3/3)	+/- (2/3)	+/- (2/3)	f. pos ^c (3/3)
NFDM	Neg (0/3)	+/- (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)
MPC80	Neg (0/3)	+/- (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)	f. pos (3/3)

^aThe result stated occurred two or more times within triplicate testing.

^b+/-, a very, very faint positive test line that may be interpreted differently by different users.

^cf. pos, faint positive.

SUPPLEMENTAL TABLE 8. *Morinaga Casein Lateral Flow IIR*

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm protein	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- ^b (2/3)	+/- (3/3)
WPC80	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (1/3)	+/- (3/3)
Sweet Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)
Acid Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- (3/3)	Pos (3/3)	Pos (3/3)
NaCas	Neg (0/3)	f. pos ^c (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
NFDM	Neg (0/3)	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
MPC80	Neg (0/3)	f. pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)

^aThe result stated occurred two or more times within triplicate testing.

^b+/-, a very, very faint positive test line that may be interpreted differently by different users.

^cf. pos, faint positive.

SUPPLEMENTAL TABLE 9. 3M Clean-Trace Surface Protein (Allergen)

Sample	Protein content of sample, result, (no. positive/no. tested) ^a					
	1 ppm	5 ppm	10 ppm	25 ppm	75 ppm	100 ppm
WPC34	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- (2/3)	Pos (3/3)	Pos (3/3)
WPC80	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- (2/3)	Pos (3/3)	Pos (3/3)
Sweet Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	+/- (3/3)	Pos (3/3)	Pos (3/3)
Acid Whey	Neg (0/3)	Neg (0/3)	Neg (0/3)	Pos (3/3)	Pos (3/3)	Pos (3/3)
NaCas	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (0/3)	Pos (3/3)	Pos (3/3)
NFDM	Neg (0/3)	Neg (0/3)	Neg (1/3)	Neg (1/3)	Pos (3/3)	Pos (3/3)
MPC80	Neg (0/3)	Neg (0/3)	Neg (0/3)	Neg (1/3)	Pos (3/3)	Pos (3/3)

^aThe result stated was the outcome of two or more replicates. A purple solution was positive, a gray solution was +/-, and a green solution was negative.

SUPPLEMENTAL TABLE 10. *Influence of various swabbing conditions on sensitivity of LFD kits tested with Neogen allergen environmental swab^a*

Kits	Sensitivity (μg NFDM protein, result ^b)				
	Method A ^c	Method B ^d	Method C ^e	Method D ^f	Method E ^g
Romer	3, +/-	10, Pos	10, Pos	10, +/-	3, +/-
AgraStrip Total					
Milk					
Romer	3, f. pos	3, f. pos	3, delayed f.	3, delayed f. pos	3, f. pos
AgraStrip			pos		
Casein					
Romer	10, f. pos	10, f. pos	Neg	Neg	3, +/-
AgraStrip BLG					
Neogen Reveal	n/a	n/a	n/a	n/a	n/a
Total Milk					
Neogen Reveal	10, f. pos	3, +/-	10, +/-	10, +/-	10, f. pos
3-D Total Milk					
Bioavid	3, f. pos	3, f. pos	3, f. pos	3, f. pos	3, f. pos
Diagnostics					
Milk					
Elution	3, +/-	3, +/-	10, Pos	10, +/-	3, f. pos
Technologies					
Bovine Total					
Milk					
Morinaga	3, f. pos	3, f. pos	3, f. pos	3, +/-	3, f. pos
Casein					
3M Clean-Trace	n/a	n/a	n/a	n/a	n/a
Surface Protein					

(Allergen)

^aEach kit was also evaluated with their kit provided swab and the results are in Table #.

^bThe overall result reported for sensitivity was the lowest concentration positively detected two or more times when analyzed in triplicate.

^cMethod A: The NFDM soil was gently dried at 37°C for approximately 13 minutes and the dry soil was moistened with 0.1 ml of ROD water before sampling the soiled area with a dry swab provided by the kit.

^dMethod B: The NFDM soil was gently dried at 37°C for approximately 13 minutes and the swab head was directly moistened with 0.1 ml of moistener or ROD water as directed by the kit insert before sampling the dry soil.

^eMethod C: The NFDM soil was dried at high temperature in a 350°F oven for 10 minutes; after cooling, 0.1 ml of ROD water was applied to the surface before sampling with a dry swab.

^fMethod D: The NFDM soil was dried at high temperature in a 350°F oven for 10 minutes; after cooling, 0.1 ml of ROD water or kit-provided moistener was applied to the swab head and the dry soil was sampled.

^gMethod E: The NFDM soil was sampled immediately (still moist) with a dry swab. All swabbing was conducted using a crosshatch technique.