

## Research Paper

### **Risk factors for poor colostrum quality and failure of passive transfer in Scottish dairy calves**

A. Haggerty<sup>a</sup>, C. Mason<sup>b</sup>, K. Ellis<sup>a</sup>, K. Denholm<sup>a</sup>

<sup>a</sup> *Scottish Centre for Production Animal Health and Food Safety, University of Glasgow School of Veterinary Medicine, 464 Bearsden Road, Bearsden, Glasgow, G61 1QH, Scotland*

<sup>b</sup> *Scotland's Rural College, St Mary's Industrial estate, Dumfries Vet Centre, Dumfries, DG1 1DX, Scotland*

\*Corresponding author. Tel.: +44 141 330 1829

Email address: [Katie.denholm@glasgow.ac.uk](mailto:Katie.denholm@glasgow.ac.uk) (K. Denholm).

## SUPPLEMENTARY MATERIAL

### **Materials and methods**

To measure serum IgG concentration using Triple J plates, all serum samples were thawed at room temperature and inverted three times prior to analysis. Three standard sera (supplied by the manufacturer) of known IgG concentration (1.96g/L, 14.02g/L and 27.48g/L of IgG) were inoculated onto agar plates and a calf serum sample of known IgG concentration (1000mg/dL IgG) was used as a positive control. The plates were incubated at room temperature for 24 hours and precipitin rings were measured using a ruler (Saikin-Kagukel Institute Co Ltd) with the precision of 0.1mm. The diameter of the precipitin ring was compared with a standard curve created by the standard sera to determine IgG concentration in g/L.

## **Supplementary Table S1**

Colostrum quality risk factor questionnaire, and responses regarding colostrum management practices, from 34 Scottish dairy farmers surveyed between February and June 2019

Questions	Category	Number of responses (%)
When are newborn calves first fed after birth (hours)?	<2	2 (5.88)
	2.5-6	21 (61.77)
	6.5-12	11 (32.35)
What volume (litres) of colostrum is fed to newborn calves at first feed?	≤2	1 (2.94)
	2.5–3	14 (41.18)
	3.5–4	15 (44.12)
	4.5–5	2 (5.88)
	≥5	2 (5.88)
When is the colostrum collected from a newly calved cow (hours after calving)?	<2	3 (8.82)
	2.5–6	17 (50.00)
	6.5–12	11 (32.35)
	12.5-24	3 (8.82)
Does colostrum from a newly calved cow get collected into a test bucket in the milking parlour?	Yes	33 (97.06)
	No	1 (2.94)
Does the colostrum sit in a test bucket before feeding to calves?	Yes	28 (82.35)
	No	6 (17.65)
If YES, for how long (hours)?	<6	26 (92.86)
	≥6	2 (7.14)
If YES, is the bucket or container covered with a lid?	Yes	12 (42.86)
	No	16 (57.14)
Where does the colostrum go after collection?	another container	13 (38.24)
	calf feeder	21 (61.76)
Do you clean test buckets and calf feeding equipment regularly?	Yes	34 (100.00)
Method of feeding	oesophageal tube	17 (50.00)
	teat feeder	17 (50.00)
What is the interval between first and second feed of newborn calves (hours)?	<6	6 (17.65)
	6.5-12	21 (61.76)
	12.5-18	7 (20.59)
Are newborn calves fed first milking colostrum only?	Yes	31 (91.18)
	No	3 (8.82)
Are newborn calves fed a mixture of first milking and later milking colostrum mixed?	Yes	4 (11.76)
	No	30 (88.24)
Are newborn calves fed fresh colostrum?	Fresh	32 (94.12)
	fresh and stored	2 (5.88)
Are <b>newborn</b> calves fed stored colostrum?	Yes	23 (67.65)
	No	11 (32.35)
How is colostrum stored?	Frozen	21 (75.00)
	Refrigerated	6 (21.43)
If you store colostrum, do you have a temperature gauge on your fridge or freezer?	Yes <sup>a</sup>	9 (26.47)
	No	25 (73.53)

If you have a temperature gauge do you check it regularly?

Yes

5(55.56%)

No

4(44.44%)

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Footnote: None of the farmers enrolled in the study used pasteurised colostrum

Footnote: <sup>a</sup>Five farmers who monitored temperatures on their storage devices for colostrum; readings ranged from -17°C to -19°C for freezers and 2°C to 3°C for refrigerators.