

# **The first 24:** **Get calves off to a great start with colostrum**

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**Vita Plus Calf and Heifer Specialists**





**Colostrum**



**2<sup>nd</sup> Feeding**

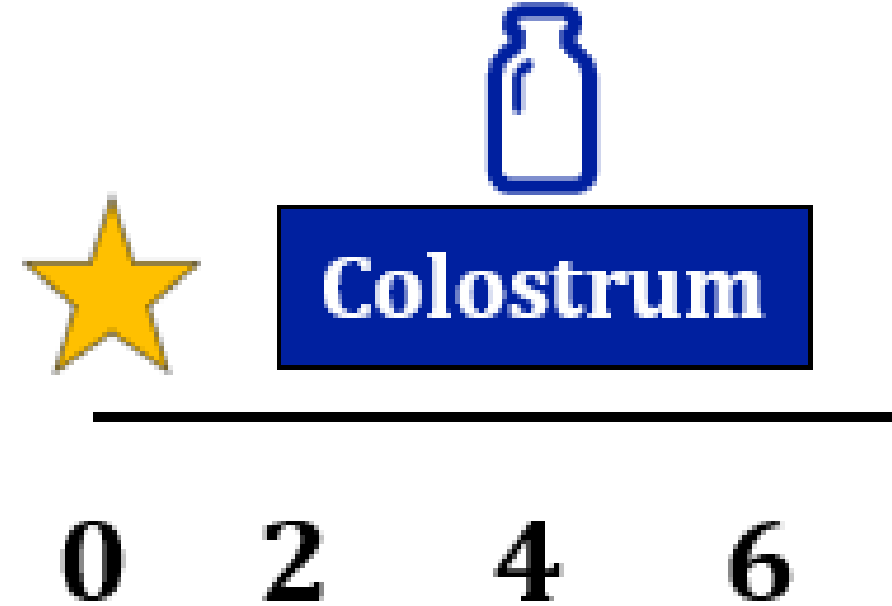


**0 2 4 6 8 10 12 14 16 18 20 22 24**



# Colostrum

- **Colostrum:**
  - High fat, protein, immune factors
  - Low lactose, volume
- **Feed a typical calf 4 quarts of low-bacteria colostrum at  $\geq 22\%$  BRIX within 2 hours.**
- **Colostrum harvest, storage, and delivery**



# Colostrum harvest

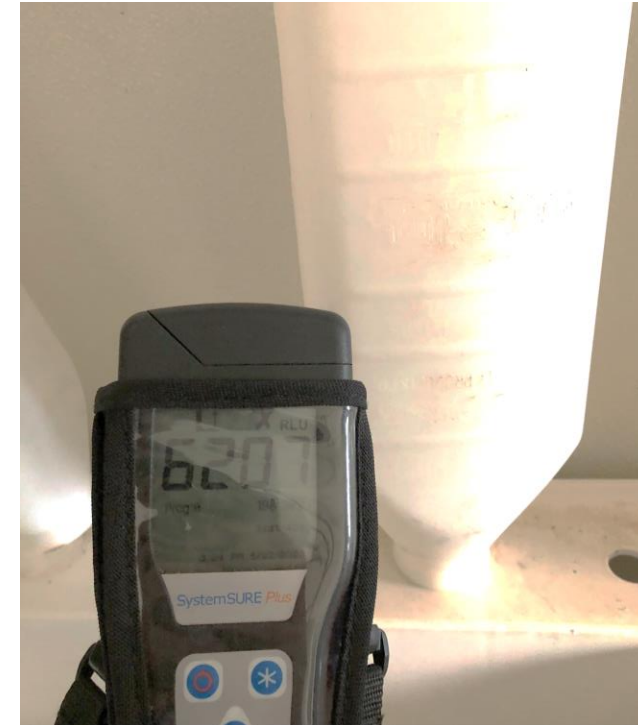
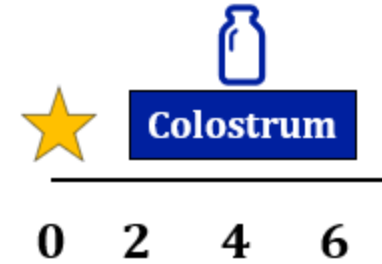
- **Clean**
  - Pen, milking equipment, feeding equipment
  - How do we keep things clean?
- **Quick**



# Colostrum harvest

- **Clean**

- How do we keep things clean?
  - Sanitation audits
    - Add detergent and sanitizer
    - Dilute chlorine dioxide spray
    - Removal of old equipment



Goals –
0 to 50 – Excellent
51 to 150 – Monitor
151 to 9999 – needs immediate attention

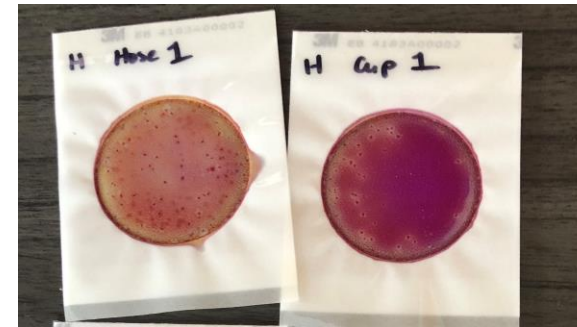
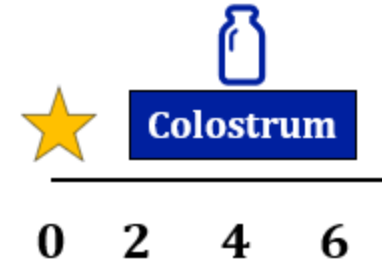




# Colostrum harvest

- **Clean**

- How do we keep things clean?
  - Sanitation audits
  - Monitor colostrum bacteria counts, pasteurization



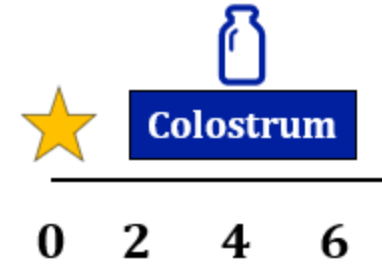
BACTERIA COUNT OF COLOSTRUM	STANDARD PLATE COUNT (CFU/ml)	COLIFORMS (CFU/ml)
Fresh colostrum	<50,000	<5,000
Heat-treated colostrum	<20,000	<100



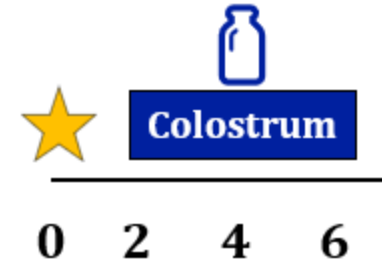
# Colostrum harvest

- **Clean**

- How do we keep things clean?
  - Sanitation audits
  - Monitor colostrum bacteria counts, pasteurization
  - Keep maternity pen clean

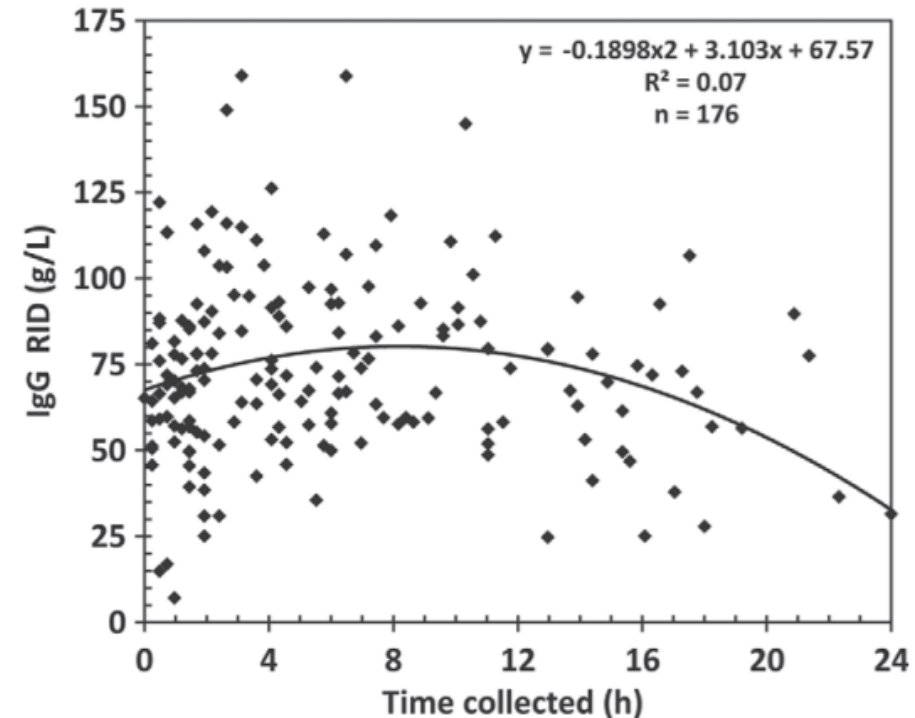


# Colostrum harvest

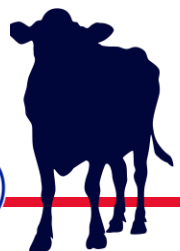


- **Quick**

- Collect first milking within 2 hours of calving to maximize quality (IgG)
  - Research varies on best window – anywhere between 30 min to <12 hours.
- *Colostrogenesis* switches to *lactogenesis* around 6 to 12 hours after calving



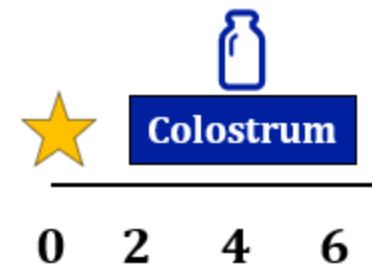
**Figure 7.** Concentration of IgG in first-milking maternal colostrum with time collected (time elapsed from calving until collection of colostrum). RID = radial immunodiffusion.



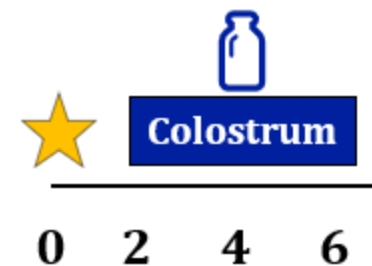


# Colostrum storage

- **Refrigerator:**
  - Chill before storing in fridge
  - Cool colostrum to  $< 40^{\circ}\text{F}$
  - Feed within 24 hours
- **Freezer**
  - Use colostrum storage bags, store flat
  - Freeze at  $-20^{\circ}\text{F}$
  - Feed within 1 year (minimize time)
- **Warm colostrum back to  $105^{\circ}\text{F}$  using  $120^{\circ}\text{F}$  circulating water**



# Colostrum storage



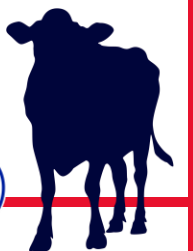
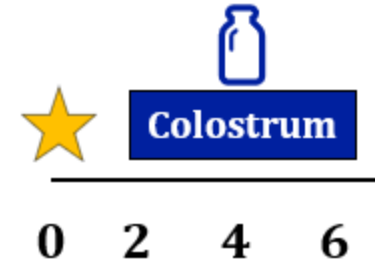
- **How to implement:**

- DIY water bath
- Thermometers in fridge/ freezer
- Colostrum warming systems

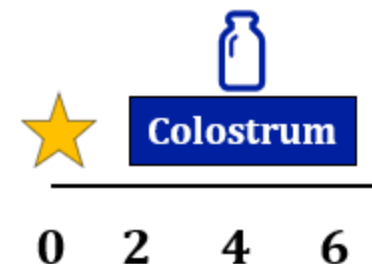


# Colostrum delivery

- Quality
- Quantity
- Quickly
- sQueaky Clean
- Method



# Colostrum delivery



## • Quality

- Colostrum BRIX > 22%
  - Colostrum Ig of 50 g/L
- Measure with an optical or digital refractometer
- Strategies:
  - Heifers get “pass,” bulls get “fail”
  - Pool colostrum
  - Dose with colostrum replacer

Table 1. Grams of **SerPass 150** needed to achieve target Brix value.

		Target colostrum Brix value, % (1 L)								
		22	23	24	25	26	27	28	29	30
Maternal colostrum Brix value, % (1 L)	16	54	63	72	81	90	99	108	117	126
	17	45	54	63	72	81	90	99	108	117
	18	36	45	54	63	72	81	90	99	108
	19	27	36	45	54	63	72	81	90	99
	20	18	27	36	45	54	63	72	81	90
	21	9	18	27	36	45	54	63	72	81
	22	0	9	18	27	36	45	54	63	72
	23	-	0	9	18	27	36	45	54	63
	24	-	-	0	9	18	27	36	45	54
	25	-	-	-	0	9	18	27	36	45
	26	-	-	-	-	0	9	18	27	36
	27	-	-	-	-	-	0	9	18	27
	28	-	-	-	-	-	-	0	9	18
29	-	-	-	-	-	-	-	0	9	
30	-	-	-	-	-	-	-	-	0	

Recommendation: Weigh the targeted amount of SerPass before adding to colostrum. SerPass is a low bulk density product and is estimated 20 grams per oz if measuring in a milk replacer cup.





# Colostrum delivery

- **Quantity**

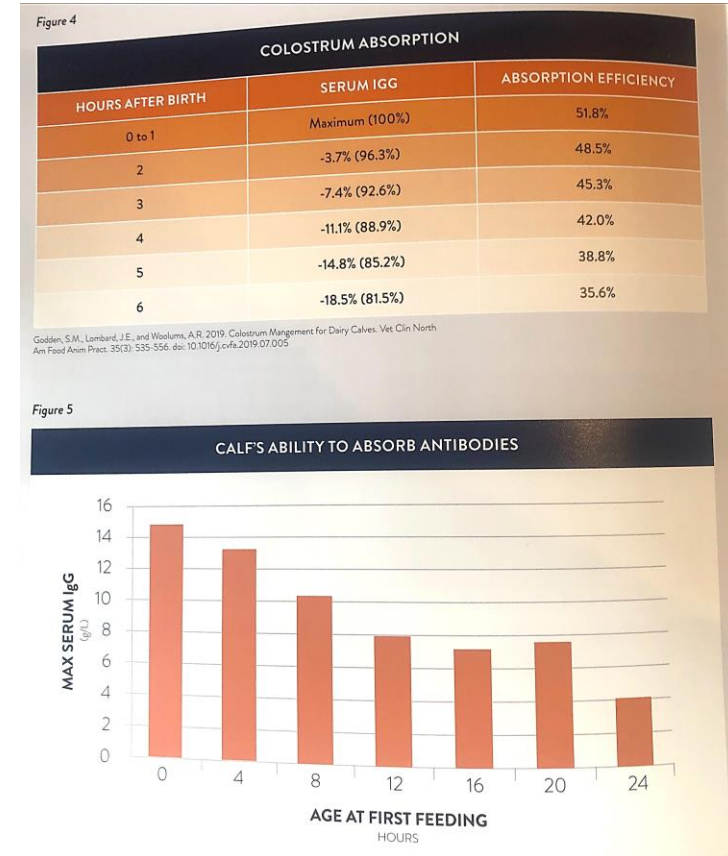
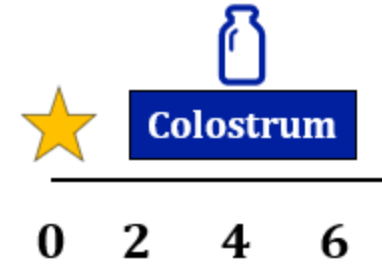
- Colostrum volume = 10% BW
  - Typical Holstein calf: 4 qts
  - Typical Jersey/small breed calf: 3 qts
- If not enough, pull from freezer or include replacer



# Colostrum delivery

- **Quickly**

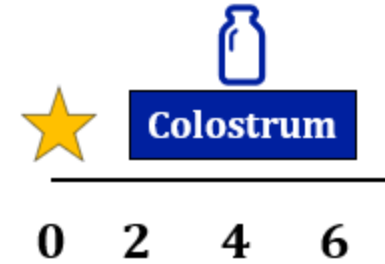
- Feed colostrum within 2 hours of calving
  - Diminishing returns every hour after (gut closure)
  - ~50% reduction in max serum Ig by 12 hours
- Sticking points:
  - Unmonitored maternity overnights
  - Multi-tasking crew



# Colostrum delivery

## • Method

- Esophageal tube feeding
  - Faster, ensure all colostrum ingested
  - Risk of aspirating colostrum
- Bottle feeding
  - Slower, calf may not want all 4 qts
  - Lesser aspiration risk, encourage suckle reflex
- Adequate serum passive transfer with either method



# Colostrum delivery

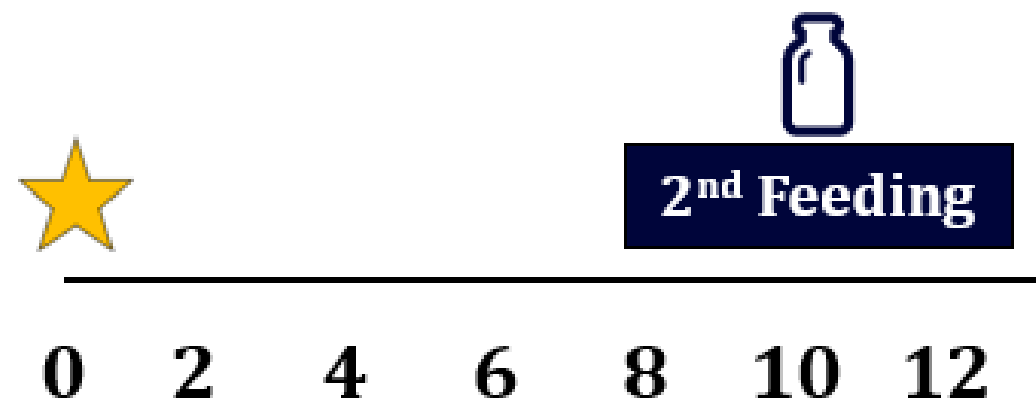
- How to test colostrum BRIX (refractometer)





# 2<sup>nd</sup> feeding

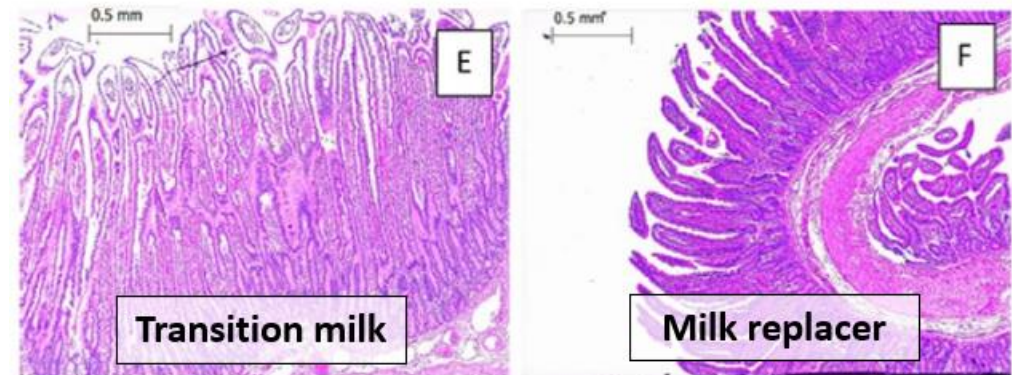
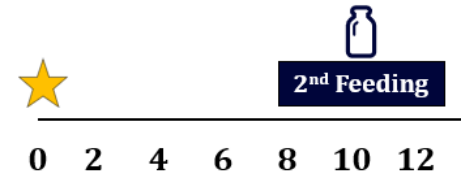
- Around 6 to 12 hours after first feeding, feed 2 to 4 qts of transition milk or lower-quality colostrum (<19% BRIX)



# 2<sup>nd</sup> feeding

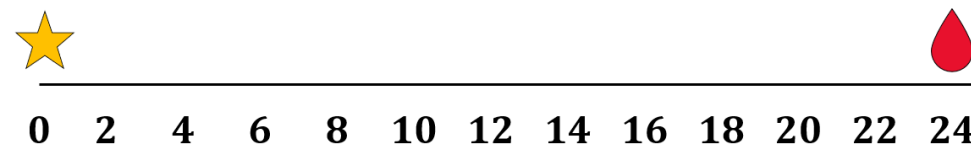
- **Benefits:**

- Improves intestinal growth and development
- Aids in scours recovery and overall improved calf health
- Higher components can mean greater growth potential



# Serum total protein

- Collect serum from calf 24-hours after birth up to 3 to 4 days of age to determine successful serum passive transfer



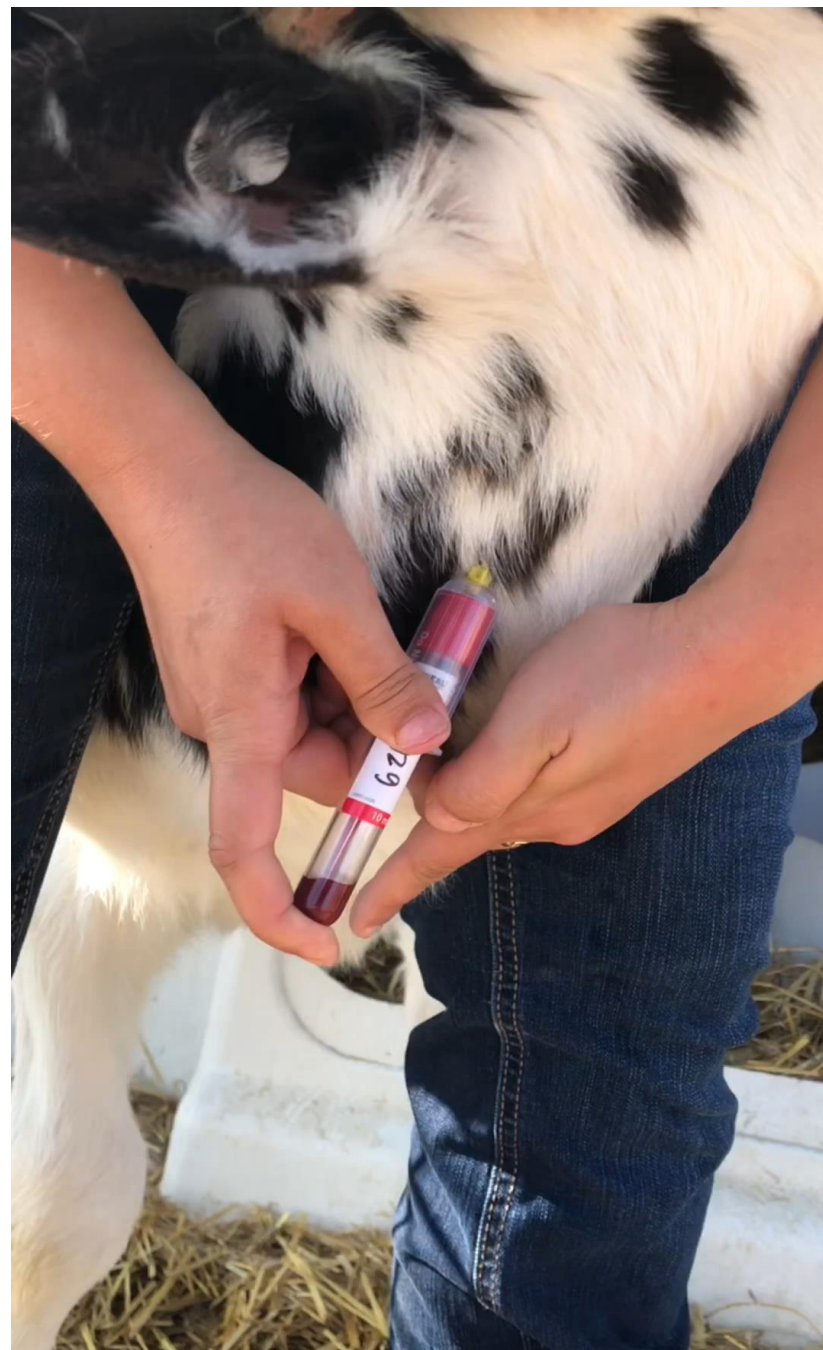
TARGET PASSIVE IMMUNITY LEVEL   Measure in Calves 2–7 days of age				
PASSIVE IMMUNITY CATEGORY	SERUM IgG CONCENTRATION (G/L)	EQUIVALENT TP (G/DL)	EQUIVALENT BRUX %	% CALVES*
Excellent	≥ 25.0	≥ 6.2	≥ 9.4%	> 40%
Good	18.0 – 24.9	5.8 – 6.1	8.9 – 9.3%	~30%
Fair	10.0 – 17.9	5.1 – 5.7	8.1 – 8.8%	~20%
Poor	< 10.0	< 5.1	< 8.1%	< 10%

\*Consensus recommendation for percent of a farm's calves in each category. Modified from Lombard et al., Journal of Dairy Science 2020.



# Serum total protein

- How to collect serum



10 12 14 16 18 20 22 24





# Practice the Process

