



# EVALUATING TASTE PREFERENCE OF ASPARAGOPSIS TAXIFORMIS IN DAIRY CATTLE

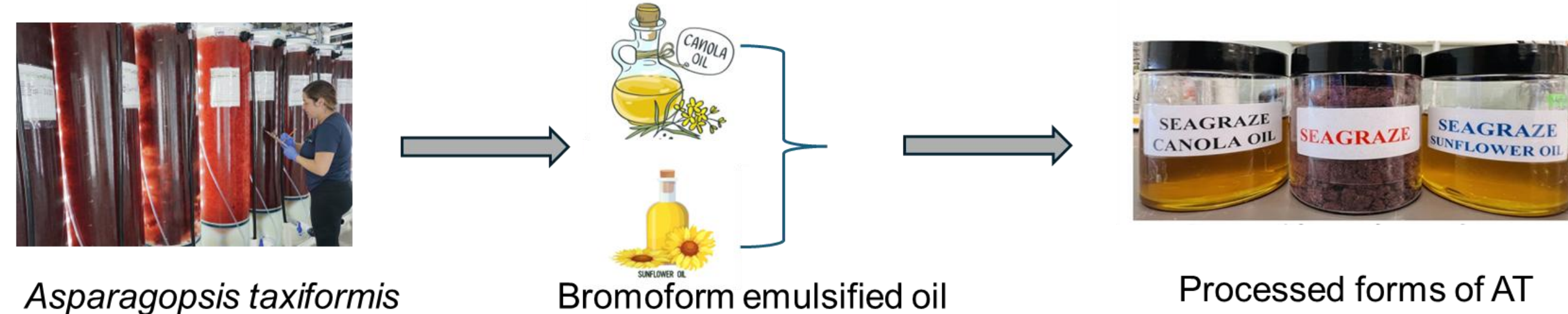
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## RATIONALE



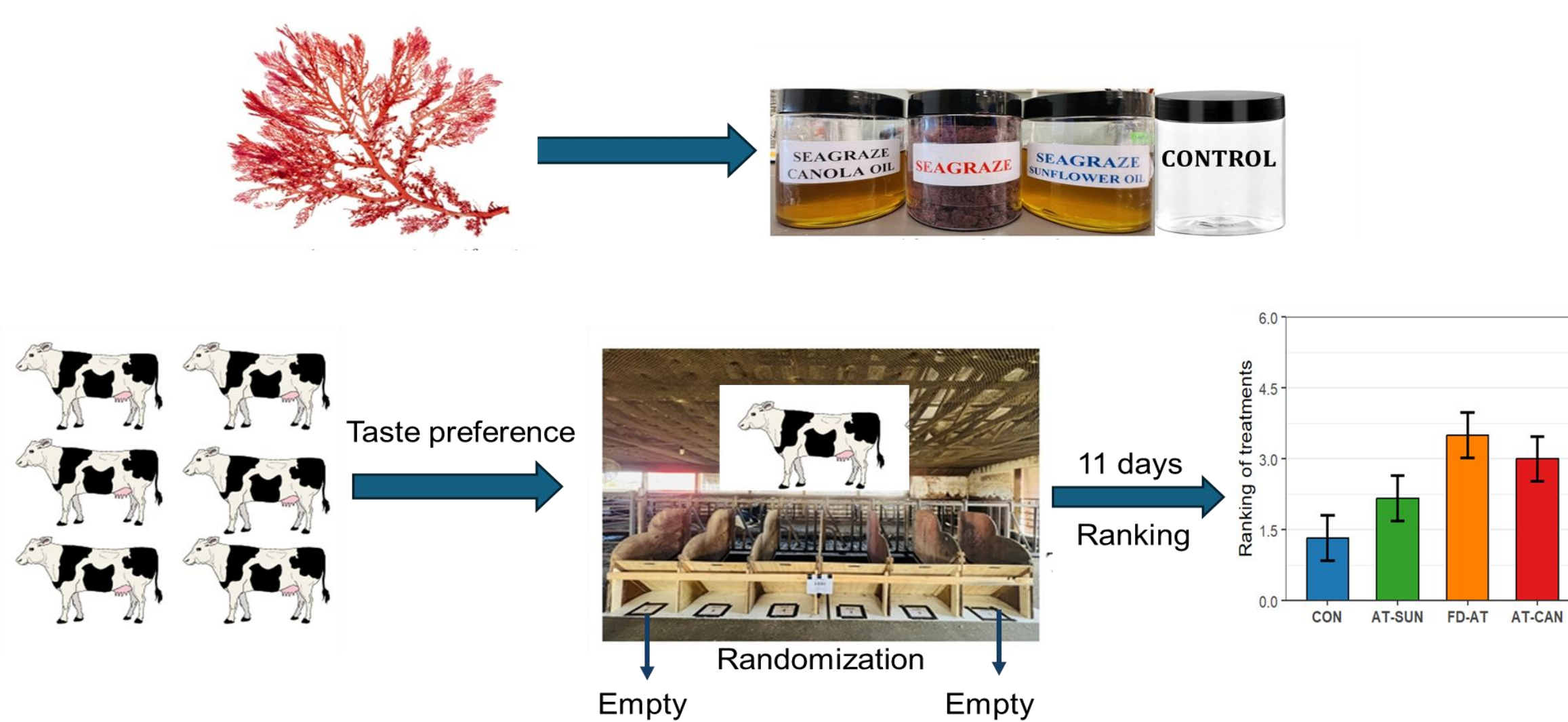
- *Asparagopsis taxiformis* (AT) has been the most effective seaweed in mitigating enteric methane emissions in dairy cows due to the halogenated compound bromoform (Angelotti et al., 2025).
- However, maintaining voluntary feed intake has been a challenge while feeding bromoform-based red seaweed. Another challenge associated with bromoform is their rapid loss through volatilization.
- Therefore, it is imperative to introduce new seaweed products by developing novel processing methods that are both efficient and improve the long-term retention of bromoform and that increase the palatability.

## OBJECTIVE AND HYPOTHESIS



- To evaluate the palatability of the red seaweed *Asparagopsis taxiformis* with different processing methods using dairy cows in a sequential elimination experiment. (Nombekela et al., 1994)
- Dairy cows will be able to distinguish different processed forms of AT via taste preference.

## MATERIALS AND METHODS



- Four pregnant Holstein heifers (624 ± 61 kg BW) and 2 multiparous Holstein dry cows (644 ± 85 kg BW) were used
- Treatments consisted of TMR (73:27 F:C ratio) without AT (CONTROL = CON) or TMR supplemented with:
  - 150 g/d AT emulsified sunflower oil (AT-SUN)
  - 139 g/d AT emulsified canola oil (AT-CAN)
  - 28 g/d freeze-dried AT (FD-AT)
- Treatments containing AT were formulated to deliver 325 mg of bromoform daily
- The feeding regimen consisted of d 0–2 (adaptation phase), d 3–6 (feeding segment 1), d 7–9 (feeding segment 2), and d 10–11 (feeding segment 3).

## RESULTS

**Table 2.** Total DMI per treatment during the feeding segment 1 (d 3–6) and mean (±SD) daily DMI in feeding segment 1 (d 3-6), feeding segment 2 (d 7-9) and feeding segment 3 (d 10-11) in dairy cows

Cows								
Treatments	Days	1	2	3	4	5	6	DMI, kg
CON <sup>1</sup>		17.2	14.5	23.6	20.0	27.1	17.9	120
AT - SUN <sup>2</sup>		19.3	27.2	14.0	9.60	9.00	11.0	90.3
AT - CAN <sup>3</sup>		11.6	13.0	3.60	5.09	15.2	10.6	59.2
FD - AT <sup>4</sup>		6.40	10.1	8.80	10.8	18.0	11.8	65.9
Segment <sup>5</sup>								Mean <sup>6</sup> ±SD
1 (kg/d)	3-6	13.6	16.2	12.5	11.3	17.3	12.8	14.0
2 (kg/d)	7-9	12.8	13.3	13.0	10.6	15.1	11.7	12.8
3 (kg/d)	10-11	13.8	13.6	13.3	9.63	14.80	16.7	13.6

<sup>1</sup>CON= Control, <sup>2</sup>AT-SUN = AT - emulsified sunflower oil, <sup>3</sup>AT-CAN = AT - emulsified canola oil, <sup>4</sup>FD-AT = Freeze - dried AT  
<sup>5</sup>The first 2 d of the study were used as an adaptation phase.  
<sup>6</sup>Calculated as the sum of daily DMI per feeding segment divided by the number of cows

**Table 1.** Ingredients and nutrient composition of the diet fed to all experimental cows

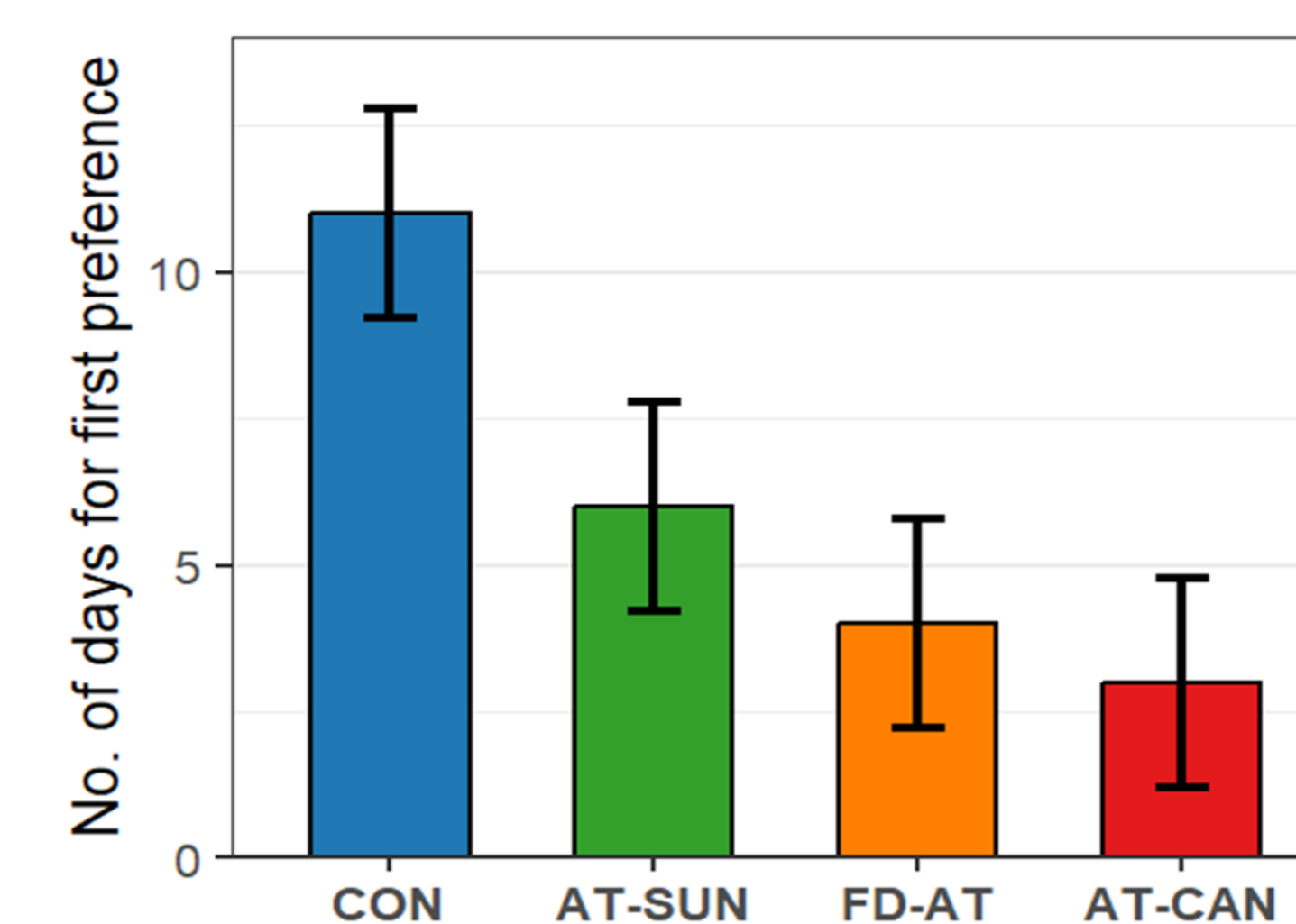
Item	Diet (% of diet DM)
Corn silage	44.6
Haylage	29.2
Prepartum mix <sup>1</sup>	23.8
Protein mix	1.50
Blood meal	0.78
Nutrient composition	15.1
DM, % of fresh matter	46.8
CP	16.0
ADF	22.2
aNDFom	37.7
EE	4.25

<sup>1</sup>Consisted of (DM basis) 27.2% protein blend (AminoMax Pro; Afgritech LLC), 22.6% beet pulp, 17.3% corn meal, 9.1% protein blend (AminoMax DCAD; Afgritech LLC), 9.0% distillers dried grains, 5.7% soybean meal, 4.0% molasses, 1.35% MgO, 1.20% CaCO<sub>3</sub>, 1.15% MgSO<sub>4</sub>, 1.0% NaCl, 0.34% vitamin E (88,200 IU/kg), and 0.09% rumen-protected methionine (Smartamine M; Adisseo USA Inc.).

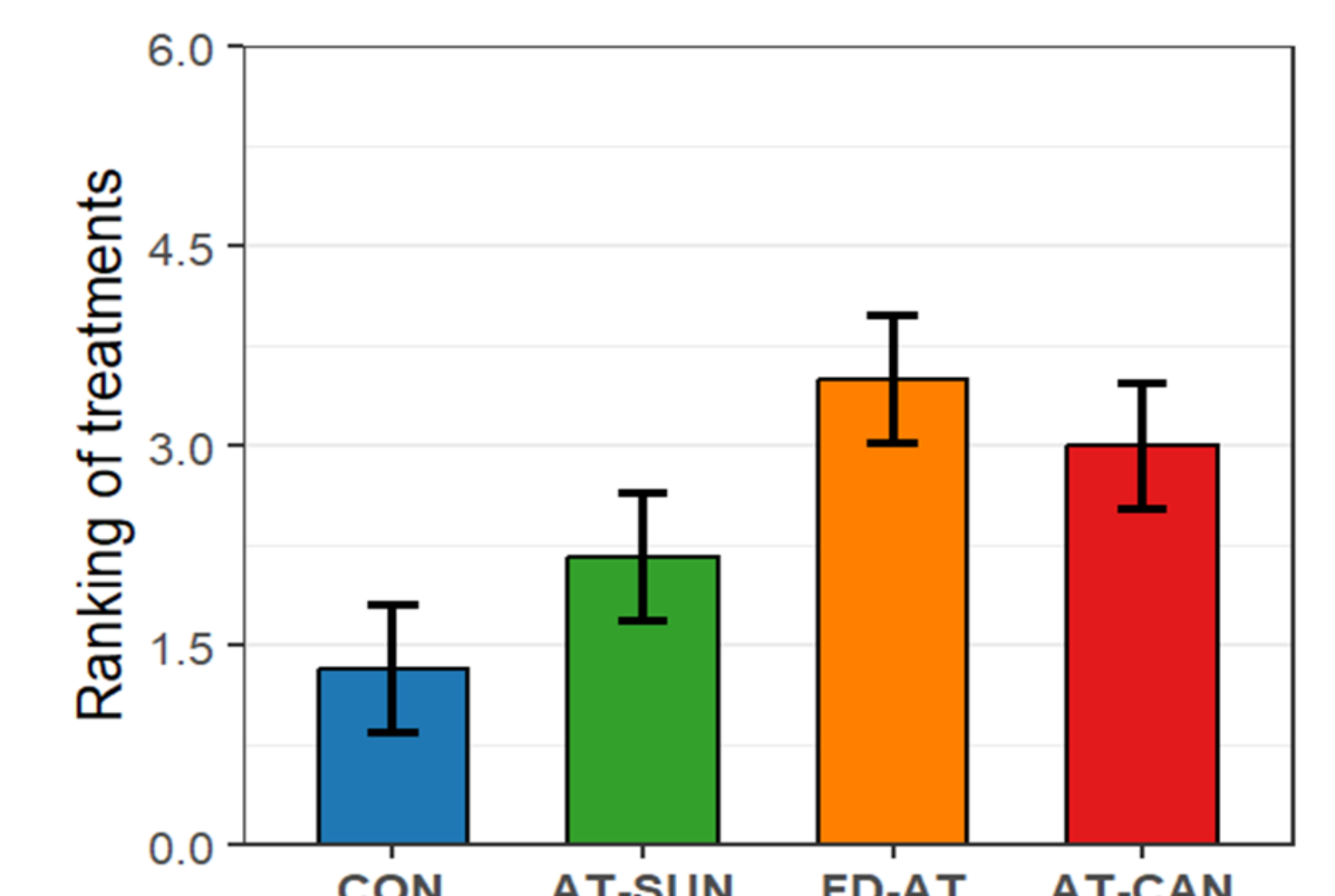
**Table 3.** Total number of days in which treatments were selected as the first preference during the feeding segment 1 (d 3–6) and ranking of treatments over all 3 feeding segments (d 3–6, d 7–9, and d 10–11) in dairy cows

Treatments				
Cows	CON	AT - SUN	AT - CAN	FD - AT
1	1	2	1	0
2	1	2	1	0
3	2	1	0	1
4	3	0	0	1
5	2	0	1	1
6	2	1	1	0
<b>Total days</b>	<b>11</b>	<b>6</b>	<b>4</b>	<b>3</b>
<b>Mean<sup>1</sup></b>	<b>1.83</b>	<b>1.00</b>	<b>0.67</b>	<b>0.50</b>
Ranking of treatments <sup>2</sup>				
Cow	1	2	3	4
1	2	1	4	3
2	2	1	3	4
3	1	3	2	4
4	1	2	3	4
5	1	2	4	3
6	1	4	2	3
<b>Sum</b>	<b>8</b>	<b>13</b>	<b>18</b>	<b>21</b>
<b>Mean<sup>3</sup></b>	<b>1.33</b>	<b>2.17</b>	<b>3.00</b>	<b>3.50</b>

<sup>1</sup>Calculated as the sum of days in which treatments (CON= Control, AT-SUN = AT - emulsified sunflower oil, AT-CAN = AT - emulsified canola oil, FD-AT = Freeze - dried AT) were selected as the first preference during feeding segment 1 (d 3–6) divided by the number of cows.  
<sup>2</sup>Rank of treatments: 1 = most preferred; 2 = second preferred; 3 = third preferred; and 4 = least preferred.  
<sup>3</sup>Calculated as the sum of rankings divided by the number of cows.



**Fig 1.** Total number of days the treatments (CON= Control, AT-SUN = AT - emulsified sunflower oil, AT-CAN = AT - emulsified canola oil, FD-AT = Freeze - dried AT) were selected as first preference



**Fig 2.** Overall ranking of treatments (CON= Control, AT-SUN = AT - emulsified sunflower oil, AT-CAN = AT - emulsified canola oil, FD-AT = Freeze - dried AT) for all 3 feeding segments

## CONCLUSIONS

- When all 3 feeding segments were evaluated for generating the final ranking, CON was the top choice of 4 animals averaging 1.33 points on a scale ranging from 1 (most preferred) to 4 (least preferred), followed by AT-SUN (2.17 points), AT-CAN (3.0 points), and FD-AT (3.50 points), respectively.
- Overall, our results showed that pregnant heifers and dry cows were able to differentiate among various processed forms of AT based on taste preference.

## REFERENCES

- Angelotti, M., M. Lindberg, M. Ramin, S.J. Krizsan, and R. Danielsson. 2025. *Asparagopsis taxiformis* supplementation to mitigate enteric methane emissions in dairy cows—Effects on performance and metabolism. *J. Dairy Sci.* 108:2503–2516. doi:10.3168/jds.2024-25258.
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