Sled dogs are incredibly resilient animals that are integral to Alaska’s culture. However, previous studies have shown that sled dogs, like humans, are prone to the negative effects of exhaustive exercise which include mild inflammation and muscular damage. Exhaustive exercise induces an altered cytokine (anti-inflammatory) profile. [3] Interleukin 10 (IL-10) has been shown to increase with exercise in human and non-human animal species. [1] This experiment elucidates the role of wild Alaskan blueberries and inflammatory responses in dogs using IL-10 in blood samples from sled dogs before and after a 20-minute run at 75% VO2 max was measured using ELISA. BioTek Gen 5 and GraphPad Prism 9 software was used to analyze raw data. There was a significant difference between the control/before run and treatment/after run (p<0.05). The increased concentration of IL-10 in these groups suggests that diet interventions involving wild Alaskan blueberries in canines increases overall immune response.

## Methods

Eight sled dogs used for timed sprint races were run in two phases: control and treatment. For the control phase, the group (n=8) was run with their normal diet and a protein supplement. In treatment, the dogs were fed a weight-dependent (2g blueberries/ kg body weight) number of Alaskan blueberries twelve hours before timed exercise, as shown in Table 1. Blood was drawn immediately before and after the timed exercise trial, flash frozen, and stored in a -80°C freezer. An ELISA assay was then run to measure IL-10 concentrations in duplicate. BioTek Gen 5 software produced raw data, optical density (OD). Statistical analysis was run by GraphPad Prism 9 to analyze obtained absorbance values. Statistical differences compared to the control group were determined with the post-hoc Dunnett’s multiple comparisons test.

### Table 1. Canine test subjects, weight, sex, and weight-adjusted acute blueberry dosage (g).

<table>
<thead>
<tr>
<th>Subject</th>
<th>Weight (lbs)</th>
<th>Sex</th>
<th>Blueberry Dosage (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>93.0 lbs</td>
<td>Male</td>
<td>82.0 g</td>
</tr>
<tr>
<td>2</td>
<td>84.0 lbs</td>
<td>Neutered Male</td>
<td>74.0 g</td>
</tr>
<tr>
<td>3</td>
<td>72.6 lbs</td>
<td>Male</td>
<td>64.0 g</td>
</tr>
<tr>
<td>4</td>
<td>69.0 lbs</td>
<td>Male</td>
<td>61.0 g</td>
</tr>
<tr>
<td>5</td>
<td>57.4 lbs</td>
<td>Female</td>
<td>50.5 g</td>
</tr>
<tr>
<td>6</td>
<td>50.0 lbs</td>
<td>Female</td>
<td>44.0 g</td>
</tr>
<tr>
<td>7</td>
<td>50.0 lbs</td>
<td>Female</td>
<td>44.0 g</td>
</tr>
<tr>
<td>8</td>
<td>62.0 lbs</td>
<td>Female</td>
<td>55.0 g</td>
</tr>
</tbody>
</table>

## Results

![Figure 4. Bar graph results of Canine IL-10 levels. A significant difference was observed after treatment and after exercise, compared to control, before exercise (p<0.05).](image)

## Conclusion

- IL-10 concentrations increased after the exercise and blueberry treatment. This suggest The increased concentration of IL-10 in these groups suggests that diet interventions involving wild Alaskan blueberries in canines increases overall immune response.
- There was a significant difference between the control trial before and after exercise. This could be due to the timing of the exercise period, as it is currently understood that the longer a subject exerts itself, the greater the concentration of IL-10 will accumulate [1]
- The advanced medicinal properties of Alaskan-sourced blueberries could provide an economical niche for Alaskan farmers, strengthening the relationship between Alaskan tradition, agriculture, and One Health.

## References

LM0 TITLE:
-Must include your findings from your experiment.
Lani Megliola,
2022-12-09T18:38:05.279

LM1 ABSTRACT:
-Why should people care about your research? Your first sentence should hook your audience. Usually diseases and such things that may affect an individual will grab their attention.
Lani Megliola,
2022-12-09T18:44:24.015

LM2 -Please be mindfull that the body of the poster must be the same font size. Also the font must be in Times New Roman.
Lani Megliola,
2022-12-09T23:41:18.890