Can Adding Black Raspberries to the Western Diet Reduce Factors that Lead to Colorectal Cancer?

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**Introduction**

- Americans with leaky gut, or increased intestinal permeability, often develop chronic inflammation (colitis) and are at a greater risk for developing colorectal cancer (CRC).
- A poor diet, high in processed foods but low in fruits and vegetables, is another notable risk factor for CRC.
- Micronutrient supplementation reduces colitis and prevents progression to colitis associated colorectal cancer (CAC).
- Due to their high concentration of anthocyanins, black raspberries have demonstrated protective effects against inflammation in the body.
- Certain antibodies are indicative of inflammation which leads to CRC.

Study conducted with funding from the USU Undergraduate Research and Creative Opportunity Grant.

**Figure 1 - Methods**

<table>
<thead>
<tr>
<th>Positive/Negative Controls</th>
<th>AIN93G (+)</th>
<th>TWD (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary Intervention with black raspberry powder</td>
<td>TWD Low BRB (5%)</td>
<td>TWD High BRB (10%)</td>
</tr>
</tbody>
</table>

**Figure 2 – Tissue Examination**

1. Tissue preparation
2. Antigen retrieval and blocking
3. Addition of primary antibody
4. Secondary antibody added
5. Addition of red pigment
6. Tissue is counterstained blue

**Figure 3 – Tumor Burden**

- Additon of 5% BRB significantly reduced tumor burden and 10% BRB reduced tumor burden such that the cancer response was similar to that of mice given supplements.

**Conclusions**

- Previous study results indicate mice fed diets supplemented with 5% and 10% BRB showed reduced tumor burden.
- Based on this information, we expect to see a decrease in the presence of inflammatory biomarkers.
- These results can help us better understand how inflammation plays a role in colorectal cancer.