Development of bioactive-rich concentrates (BRC) derived from Portuguese cherries and cactus pear with potential prevention/therapeutic application in IBD.

**Introduction**

- Inflammatory Bowel Diseases (IBD) are characterized by an uncontrolled inflammatory response. Oxidative Stress plays a major role in the maintenance and amplification of this response.
- There are evidences that polyphenols regular consumption can reduce or delay IBD development, due their strong antioxidant capacity.
- Sweet Cherries (*Prunus Avium*) and cactus pear (*Opuntia ficus indica*) are known for their high polyphenolic composition and strong antioxidant activity that are correlated with their potential anti-inflammatory activity.1,3

**Anti-inflammatory Activity**

- **Cell Barrier Intactness**
  - Caco2 cells before stimulation (during incubation with BRC).
  - Caco2 cells after 24h of stimulation.

- **Inhibition of NO secretion**
  - Nitric oxide is overproduced in case of inflammation and is mainly secreted to basolateral compartment.
  - After 24h of stimulation there are no differences in NO secretion what is consistent with previous reports. After 48h of stimulation stimuli, Cherry's and Cactus pear's BRC inhibit NO secretion in a similar percentage: 23 and 21% respectively.

- **IL-8 Secretion**
  - Stimuli used induced IL-8 secretion.
  - Pre-incubation (4h) with BRC extracts, namely Cherry BRC could modulate IL-8 secretion, reducing it practically to basal level.

**Bioactive rich concentrates**

- **Preparation of Cherry's and Cactus pear's BRC.**
  - juice
  - Amberlite XAD16 resin 
  - 200ppm
  - RT

- **Polyphenolic Composition**
  - Cherry BRC - high content in anthocyanins that are recognized as anti-inflammatory compounds:
    - Cyanidin-3-glucoside (26.82mg/g)
    - Cyanidin-3-rutinoside (114.8mg/g)
    - Peonidin-3-glucoside (4.83mg/g)

- **Antioxidant Activity**
  - All extracts were characterized in terms of antioxidant activity using different and complementary assays:
    - A 1:1 (mg GAE) mixture of both extracts were formulated in order to evaluate synergistic action

**Conclusion**

- Cherry BRC has higher antioxidant activity.
- Cactus pear's BRC has the highest in inflammatory activity due to their higher polyphenolic proportion.
- Cherry BRC and cactus pear BRC has the highest HORAC. WHICH MEANS that this two extracts don't have synergic activities.
- Similar inhibition of LDL oxidation to cherry's BRC, showing the important contribution of anthocyanins present in this EXTRACT.