Lactic acid fermentation of crowberry juice: Effects on phenolic compounds

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FOOD CHEMISTRY

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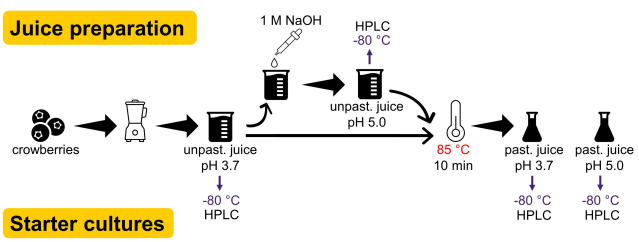
1 Introduction

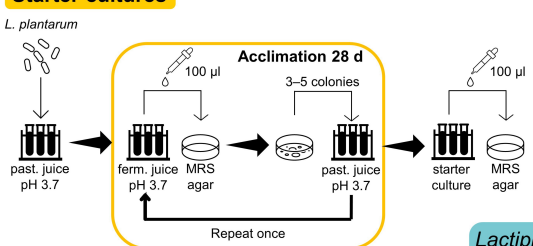
- **Crowberry** (*Empetrum nigrum* L.) underutilized berry crop rich in phenolic compounds
- New ways to process berries → better flavor, more attractive to consumers and industry?
- **Lactic acid fermentation** to modify physicochemical properties? → studies on crowberry juice lacking
- How does lactic acid fermentation impact various phenolic compounds, like **anthocyanins**?

2 Materials and methods

Juice preparation

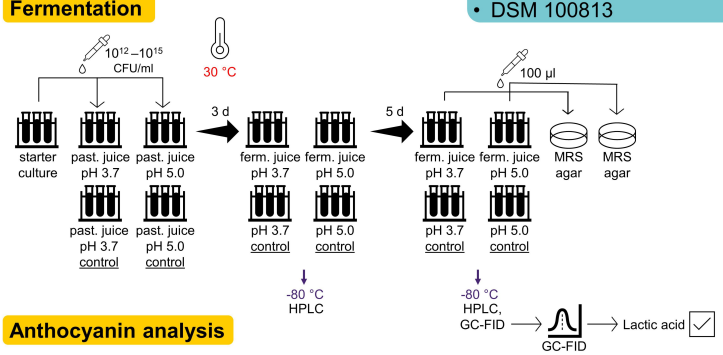


Starter cultures

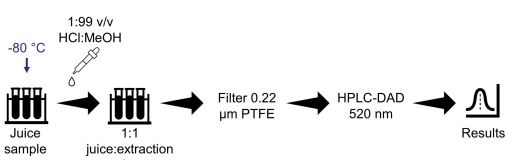


Lactiplantibacillus plantarum
- DSM 16365
- DSM 100813

Fermentation



Anthocyanin analysis



3 Results

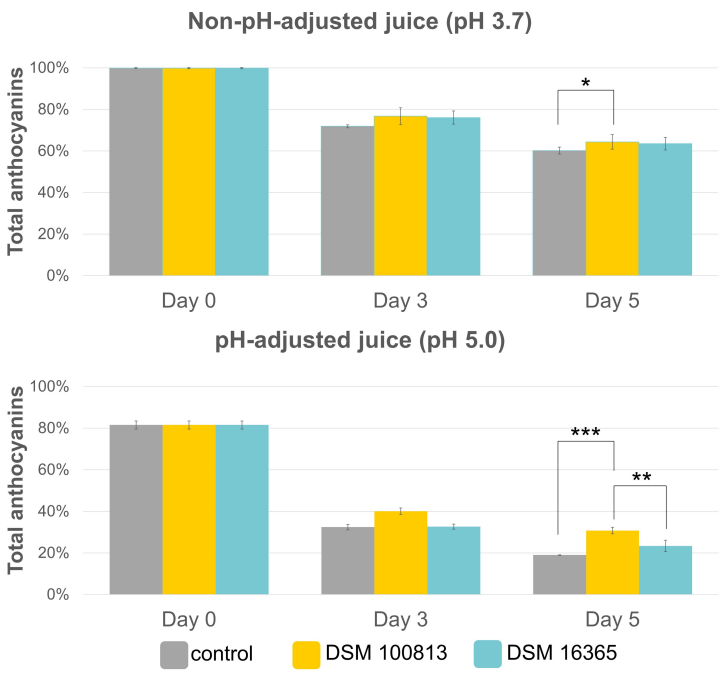


Fig. 1 Total anthocyanins in crowberry juice samples based on HPLC-DAD. Results normalized for unpasteurized, pH 3.7 juice (100 %).
* = p<0.05; ** = p<0.01; *** = p<0.001

Table 1 Results for viable colony counts. Number of viable cells for both strains of *L. plantarum* in non-pH-adjusted and pH-adjusted crowberry juice after inoculation (Day 0) and after fermentation (Day 5). CFU = colony forming unit.

Strain	pH	Day 0 (CFU/ml)	Day 5 (CFU/ml)	Change
DSM 100813	3.7	10^{15}	10^{14}	Decrease
DSM 16365	3.7	10^{12}	10^{11}	Decrease
DSM 100813	5.0	10^{14}	10^{18}	Increase
DSM 16365	5.0	10^{14}	10^{18}	Increase

4 Conclusions

- **Anthocyanins decreased in all samples** during fermentation, **more at pH 5.0**
- However, **in samples fermented by DSM 100813 anthocyanin content slightly higher** than in corresponding controls
  → Stabilization of anthocyanins?
- **pH-adjusted juice more suitable growing medium** (increase in number of bacteria)