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## Phenolic extracts of bilberry: they protect lipid from oxidation in in vitro simulated digestion conditions

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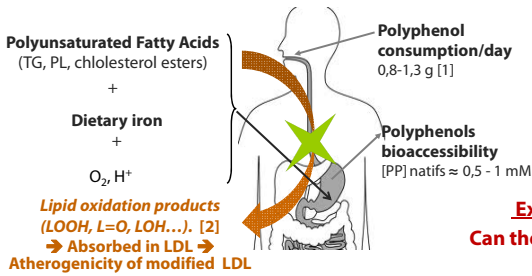


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## BACKGROUND



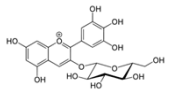
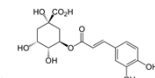
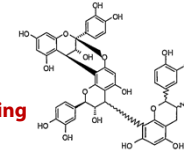
**Extracts of bilberry stems, leaves and fruits:**  
**Can they protect dietary lipids from oxidation during digestion in *in vitro* conditions?**

**Bilberry (BB) (*Vaccinium myrtillus* L.) polyphenols: content and main contributors [3]**

**Stems**  
79 mg/g DE  
A-type trimer  
B-type dimer  
5-O-Caffeoylquinic-acid

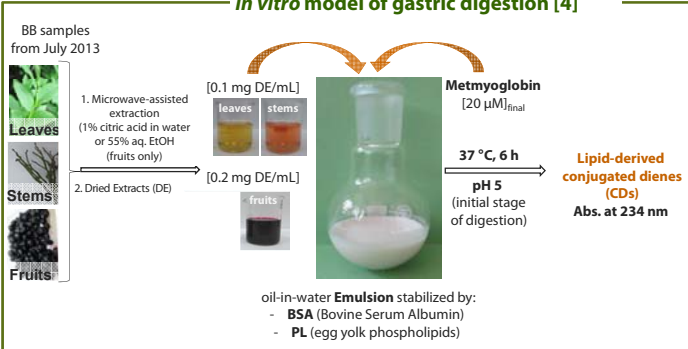
**Leaves**  
125 mg/g DE  
5-O-Caffeoylquinic-acid

**Fruits**  
27 (H<sub>2</sub>O) mg/g DE  
41 (aq. EtOH) mg/g DE  
delphinidin-3-O-glucoside



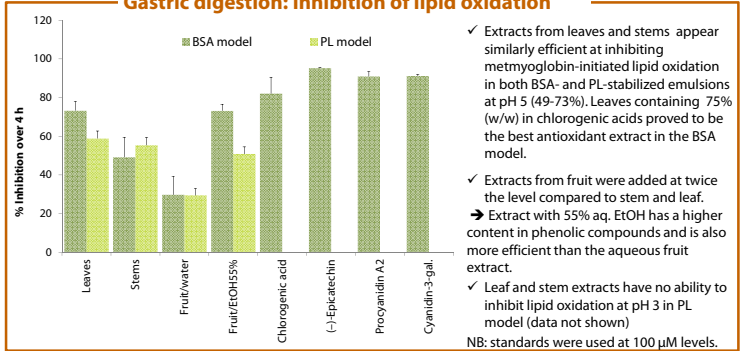
## MATERIALS AND METHODS

### *In vitro* model of gastric digestion [4]

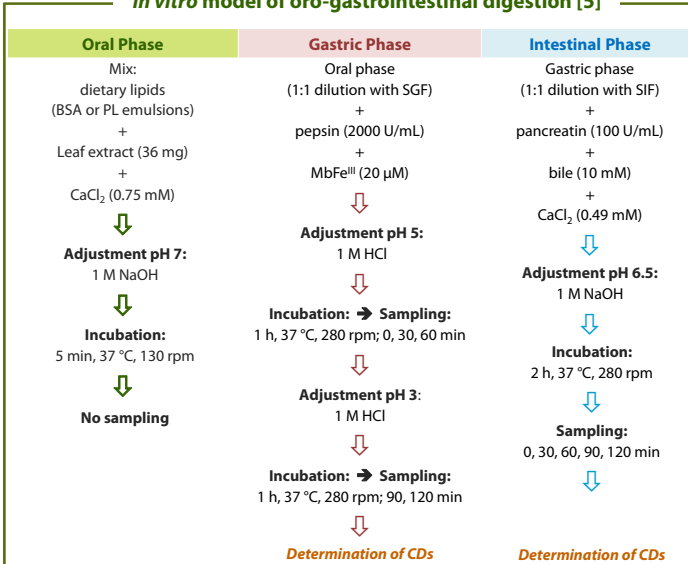


## RESULTS AND DISCUSSIONS

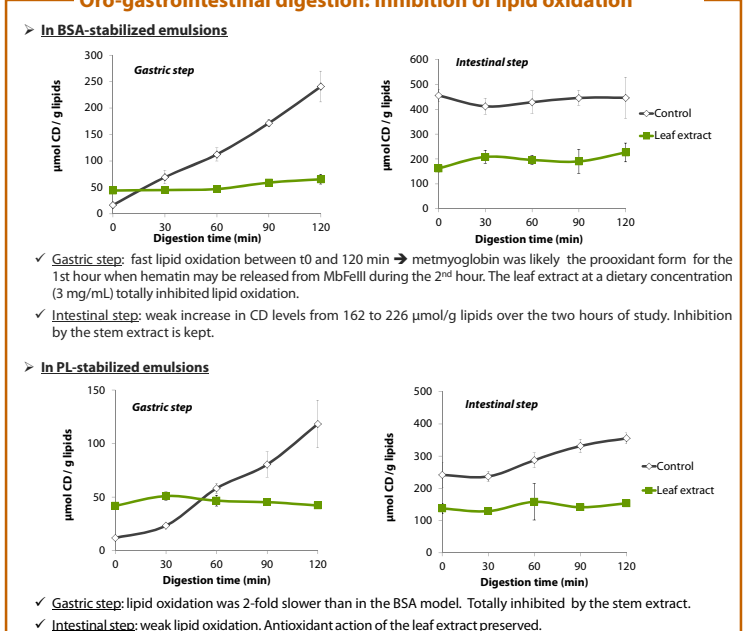
### Gastric digestion: Inhibition of lipid oxidation



### *In vitro* model of oro-gastrointestinal digestion [5]



### Oro-gastrointestinal digestion: Inhibition of lipid oxidation



## CONCLUSIONS

Leaf, stem and fruit extracts of bilberry can play a protective role towards oxidation of polyunsaturated dietary lipids during digestion.

The fast lipid oxidation in the gastric step (BSA and PL emulsion systems) and the slower lipid oxidation in the intestinal step (PL system) were totally inhibited by a bilberry leaf extract at the level of 3 mg/mL in the gastric step.

→ the stability of the phenolic compounds should be further evaluated in the gastrointestinal digestion to give an insight into their protective mechanisms.

### References:

- [1] Pérez-Jiménez J. et al., Am. J. Clin. Nutr., 2011, 93, 1220-8.
- [2] Ursini F. and Sevanian A., Biol. Chem., 2002, 383, 599-605.
- [3] Bujor et al., Food Chem, submitted.
- [4] Lorrain et al., J Agric Food Chem., 2012, 60, 9074-9081.
- [5] Minekus M. et al., Food & Function, 2014, 5, 1113-24.M

