Strawberry yogurt incorporation effects on the phytochemical composition

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Introduction

Yoghurt is often combined with fruit to create value-added products. Strawberry prepartes are the leading fruit used in European fruit yoghurts. Interactions of plant phenolics with proteins may lead to the formation of soluble or insoluble complexes formed by the interaction of polyphenols with exposed hydrophobic and preferably planar aminoacid side chains. These interactions may have a detrimental effect on the in vivo bioavailability of both phenolics and proteins.

Objectives

The aims of this study were (i) to evaluate the protein fingerprints of yogurt before and after the addition of strawberry preparte, and (ii) to evaluate the antioxidant properties and fruit phytochemical availability in the final fruit yogurt.

Methods

![Diagram of the methods]

Results & Discussion

![Graphs and images]

Table 1. Yoghurt whey proteins analysed by FPLC. Control is natural yogurt without fruit and strawberry preparte.

<table>
<thead>
<tr>
<th>Days</th>
<th>α-lactalbumin</th>
<th>β-lactoglobulin</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.179</td>
<td>0.119</td>
</tr>
<tr>
<td>7</td>
<td>0.244</td>
<td>0.122</td>
</tr>
<tr>
<td>14</td>
<td>0.176</td>
<td>0.108</td>
</tr>
<tr>
<td>21</td>
<td>0.177</td>
<td>0.142</td>
</tr>
<tr>
<td>28</td>
<td>0.363</td>
<td>0.082</td>
</tr>
</tbody>
</table>

ND: Not detected.

- Total antioxidant activity, total phenolics and total anthocyanins of strawberry preparte decrease respectively 18%, 11% and 25% at the end of yogurt shelf-life.
- Pelargonidin-3-glucoside, (+)-catechin and (-)-epicatechin decrease significantly when strawberry preparte is incorporated into yogurt when compared with control (48, 34 and 51%, respectively, at the end of shelf-life).
- α-Lactalbumin decreased by 62% at the end of shelf-life of strawberry yoghurt in relation to natural yoghurt. β-Lactoglobulin was not detected
- SDS-PAGE demonstrate a decrease in α-lactalbumin and a complete disappearance of β-lactoglobulin.

Conclusions

- Pronounced reductions were observed in pelargonidin-3-glucoside, (+)-catechin and (-)-epicatechin and the whey protein β-lactoglobulin.
- The reductions in polyphenols and whey proteins are indicative of complexes formation and losses in their activities.

Acknowledgements

Work funded by Agency of Inovation (Agência de Inovação, ADI, Portugal) and Quadro de Referência Estratégico Nacional (QREN, Portugal) through project Frumais – Preservation of functional, nutritional and organoleptic characteristic of fruits and derived food (QREN-ADI-55861), promoted by INGALACT, and PIDD grant ADI/B/5794/02010(Fundo para a Ciência e a Tecnologia, Portugal) to A. Oliveira.