Samarkand Agricultural Institute
Department of Physics and Chemistry

Umida Khodjaeva, Guzal Hodjayorova

FOOD ADDITIVES: IMPORTANT PART OF FUNCTIONAL FOOD

Samarkand-2016
Main characteristics and classification of food additives:

- antioxidants,
- food colouring,
- flavours,
- flavor enhancers,
- stabilizers,
- sweeteners
INTRODUCTION

Functional Food Science in Europe (FUFOSE)
a working definition of functional food:
a food that beneficially affects one or more target functions in the body beyond adequate nutritional effects in a way that is relevant to either an improved state of health and well-being and/or reduction of risk of disease
Practical examples of a functional food:

- a food to which a component has been added (e.g. a spread with added phytosterols);
- a food from which a component has been removed or reduced (e.g. a yogurt with reduced fat);
- a food in which one, or several components, have been modified, replaced or enhanced to improve its health properties (e.g. a juice drink with enhanced antioxidant content, a yogurt with added prebiotic or probiotic).
The most known food additives are differ antioxi-dants, bulking agents, food colouring, flavours, stabilizers, sweeteners and the aim of this review is shortly describe main their characteristics and effects on human organism.
ANTIOXIDANTS

glycosides
flavanones and flavones
genistein, daidzein, glycitein
butylated hydroxyanisole (BHA)
butylated hydroxytoluene (BHT)
Sweeteners

Aspartame
Advantame
Steviol glycosides
Acesulfame potassium
Calcium saccharin
Erythirol
Hydrogenated starch hydrolysates
etc.
Stabilizers

- Agar
- Pectin
- Acetyl Alginate
- Carrageen
- Gelatin
- Cellulose or cellulose derivatives
- Guar gum
# BULKING AGENTS:
Content of Starch in different Plants

<table>
<thead>
<tr>
<th>Name of plant</th>
<th>Part of plant</th>
<th>Content of starch</th>
<th>Content of sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typha latifolia</td>
<td>dried rhizome</td>
<td>58% (25-58%)</td>
<td>10%</td>
</tr>
<tr>
<td>Cetraria islandica</td>
<td>Vegetation part</td>
<td>Near 44% of lichen</td>
<td>-</td>
</tr>
<tr>
<td>Glyceria</td>
<td>weevil</td>
<td>75%</td>
<td>-</td>
</tr>
<tr>
<td>Zea mays L.</td>
<td>seeds</td>
<td>71%</td>
<td>-</td>
</tr>
<tr>
<td>Artocarpus altilis</td>
<td>dried pulp</td>
<td>80% (60-80%)</td>
<td>14%</td>
</tr>
<tr>
<td>Nymphaea alba</td>
<td>rhizome</td>
<td>40%</td>
<td>20,00%</td>
</tr>
<tr>
<td>Avena</td>
<td>grain</td>
<td>60%</td>
<td>-</td>
</tr>
<tr>
<td>Butymus umbellotus</td>
<td>rhizome</td>
<td>60%</td>
<td>-</td>
</tr>
<tr>
<td>Trapa natans and Trapa bispinosa</td>
<td>nut</td>
<td>55%</td>
<td>-</td>
</tr>
<tr>
<td>Ipomoea batatas L.</td>
<td>tubers</td>
<td>72%</td>
<td>-</td>
</tr>
<tr>
<td>Sorghum</td>
<td>-</td>
<td>74%</td>
<td>-</td>
</tr>
<tr>
<td>Manihot</td>
<td>-</td>
<td>77%</td>
<td>-</td>
</tr>
<tr>
<td>Pisum</td>
<td>grain</td>
<td>40%</td>
<td>-</td>
</tr>
<tr>
<td>Hordeum L.</td>
<td>grain</td>
<td>75%</td>
<td>-</td>
</tr>
<tr>
<td>Solanum tuberosum</td>
<td>tubers</td>
<td>82%</td>
<td>-</td>
</tr>
<tr>
<td>Oryza</td>
<td>grain</td>
<td>89%</td>
<td>-</td>
</tr>
<tr>
<td>Secale</td>
<td>grain</td>
<td>72%</td>
<td>-</td>
</tr>
<tr>
<td>Triticum L.</td>
<td>grain</td>
<td>74%</td>
<td>-</td>
</tr>
<tr>
<td>Althaea officinalis L.</td>
<td>roots</td>
<td>37%</td>
<td>10%</td>
</tr>
<tr>
<td>Sagittaria sagittifolia L.</td>
<td>tubers</td>
<td>35%</td>
<td>-</td>
</tr>
</tbody>
</table>
Color additives

FD&C Blue Nos. 1 and 2, FD&C Green No. 3, FD&C Red Nos. 3 and 40, FD&C Yellow No. 5 (tartrazine) and No. 6, Orange B, Citrus Red No. 2, annatto extract, beta-carotene, grape skin extract, cochineal extract or carmine, paprika oleoresin, caramel color, fruit and vegetable juices, saffron (Note: Exempt color additives are not required to be declared by name on labels but may be declared simply as colorings or color added)
Emulsifiers

- Soy lecithin, mono- and diglycerides
- egg yolks
- polysorbates
- sorbitan monostearate
CONCLUSIONS

- The review demonstrates that nowadays is presented many differ plants sources of food additives with natural origin and also artificial food additives. However, the review points out a series of aspects which warrant attention e.g. that many substances have not been re-assessed for many years, although new data are accumulating in the scientific literature and in certain cases calls for a new assessment of their effects on human health.
• It is recommended that a mechanism be put in place in EU, which ensures a systematic, periodic review of all permitted food additives. In the meantime it is suggested to use the data in the present review as help for to know common situation with food additives as some part of functional food system.
Thank you for your attention!