DEVELOPING AND CUSTOMIZING HEALTHY BREADS FOR EUROPEAN CONSUMERS

WHOLE GRAIN SUMMIT 2015, Portland

Roberto Ranieri
www.openfields.it
Contents

• Bread Consumption in Europe
• HealthBread Project
• HealthBread Applications
### BREAD IN EUROPE - II

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>TOTAL BREAD PRODUCTION</th>
<th>CONSUMPTION OF BREAD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TONS</td>
<td>~Kg/head/year</td>
</tr>
<tr>
<td>Germany</td>
<td>6,400,000</td>
<td>68</td>
</tr>
<tr>
<td>France</td>
<td>3,150,000</td>
<td>57</td>
</tr>
<tr>
<td>Italy</td>
<td>3,000,000</td>
<td>62</td>
</tr>
<tr>
<td>Spain</td>
<td>1,699,095</td>
<td>45</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1,409,353</td>
<td>37</td>
</tr>
<tr>
<td>Greece</td>
<td>865,000</td>
<td>32</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>620,200</td>
<td>42</td>
</tr>
<tr>
<td>Finland*</td>
<td>210,000</td>
<td>42</td>
</tr>
<tr>
<td>Denmark</td>
<td>125,000</td>
<td>42</td>
</tr>
<tr>
<td>Slovenia*</td>
<td>85,728</td>
<td>42</td>
</tr>
</tbody>
</table>

*Data from Finland and Slovenia are 2012 statistics*

Global Data by AIBI (Association Internacional de la Boulangerie Industrielle) Bread Market Report 2013
### Country Comparisons

#### Number of Bakeries

<table>
<thead>
<tr>
<th>Country</th>
<th>Industrial Bakeries</th>
<th>Craft Bakeries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovenia*</td>
<td>289</td>
<td>190</td>
</tr>
<tr>
<td>France</td>
<td>220</td>
<td>30,000</td>
</tr>
<tr>
<td>Italy</td>
<td>190</td>
<td>22,500</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>67</td>
<td>2,000</td>
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<td>Germany</td>
<td>50</td>
<td>10,750</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>48</td>
<td>n/a</td>
</tr>
<tr>
<td>Spain</td>
<td>40</td>
<td>11,000</td>
</tr>
<tr>
<td>Greece</td>
<td>22</td>
<td>7,000</td>
</tr>
<tr>
<td>Finland*</td>
<td>17</td>
<td>640</td>
</tr>
<tr>
<td>Denmark</td>
<td>6</td>
<td>n/a</td>
</tr>
</tbody>
</table>

#### Market Share (%)

<table>
<thead>
<tr>
<th>Country</th>
<th>Industrial Bakeries</th>
<th>Craft Bakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Netherlands</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>Finland*</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Slovenia*</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>Denmark</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Germany</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>France</td>
<td>35</td>
<td>55</td>
</tr>
<tr>
<td>Spain</td>
<td>34</td>
<td>59</td>
</tr>
<tr>
<td>Italy</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>Greece</td>
<td>4</td>
<td>96</td>
</tr>
</tbody>
</table>

*Data from Finland and Slovenia are 2012 statistics

Global Data by AlBi Bread Market Report 2013
HIGH FIBRE BREAD - RETAIL VOLUME IN WESTERN EUROPE

*HIGH FIBRE BREAD - RETAIL VOLUME

*AGGREGATION OF PACKAGED/INDUSTRIAL AND UNPACKAGED/ARTISANAL BREAD. ALL WHOLEMEAL, WHOLEGRAIN, MULTI- GRAIN, BROWN BREAD, AND BREAD SUBSTITUTES THAT CONTAIN AT LEAST 6G OF FIBRE PER 100G OR MORE ARE INCLUDED

Euromonitor International 2015
In Europe, bread is currently receiving a lot of criticism because of:

- Carbohydrate content
- Salt Content
- Gluten-related disorders
- Taste is not like that of the old days

While the nutritional and health benefits of bread containing bran are not well known by consumers

What to do for Bakers?
What to do for Bread Eaters to offer a tastier bread as well as nutritionally appealing?
ATTRACTION BREAD PRODUCTS with HIGH NUTRITIONAL VALUE and with NUTRIENTS DIRECTLY COMING from the WHEAT KERNEL

17 Partners | Role
---|---
TNO (NL) | Research
VTT (FL) | Research
NBC (NL) | SME and Mentoring
OPEN FIELDS (IT) | SME and Mentoring
RDTS (AT) | SME and Project Managing
DYATIC (NL) | SME and Enzymes producer
GEOVITA (IT) | SME and Ingredient producer
BAKERY KAMSTRA (NL) | Industrial Bakery
MEESTER BAKKER ULJEE (NL) | Craft Bakery
BAKEREI WELTER (D) | Craft Bakery
BAKEREI RIPKEN (D) | Craft Bakery
BAKEREI KASSES (AT) | Craft Bakery
BAKEREI LASSER (AT) | Craft Bakery
PANIFICIO FUSÈ (IT) | Craft Bakery
PANIFICIO REGAZZONI (IT) | Craft Bakery
KAMPFFMEYER FOOD INNOVATION, NOW GOODMILLS INNOVATION (D) | Ingredient industry
TANDOI (IT) | Mill

Coordinator:
Jan Willem van der Kamp from TNO
Dietary fibre and micronutrients intake

Intake of dietary fibre is below recommended levels

Recommended intake for adults \( \rightarrow 25 \text{ day}^1 \) (Daily reference intake. DRI)

Cereal fibre are the preferred type of fibre\(^2\).

Bread is one of the foods derived from the processing of cereals more consumed.

Health bread

Magnesium, Zinc, Iron (for females), are included in the list of compounds where actual intake is often lower than the recommended intake

\(^1\)www.efsa.europa.eu  \(^2\)German Nutrition Society, 2012

Whole Grain Summit 2015
PRODUCT DEVELOPMENT AIMS

Whole Grain
6-7% Fibre

Brown Bread
~ 50% WG

Multi Grain
can be white + de-
corations

White Bread
~ 2.5-3% Fibre

Healthy & attractive Bread Product Innovation Area
HealthBread: Wheat based Improvements (with Nutrition Claims)

Whole Grain+
Nutritional Improvement (eg. fibre + >30%)

Whole Grain+
Product Quality Improvement (WG Small Breads, Baguette,...)

White Bread+
Nutritional Improvement (>6% Fibre, + eg. >30% more Micronutrients)

Nutritional Quality
(Bioactive Compounds Concentration & Bioavailability)

Product „Quality” (eg. Volume, Softness, Light Colour, no bitter Taste)
The HealthBread project (KBBE.2012.2.3-02 - 312165) is financially supported by the European Commission in the Communities 7th Framework Programme. The Community is not liable for the material presented in this format or in other such HealthBread dissemination publications.
Pearling and Air Separation

Fermentation

Control, unfermented bran

Fermented bran

Whole Grain Summit 2015
PEARLING AND AIR SEPARATION

SOFT WHEAT ALEURONE
- Ø = 457 µm
- Ø = 110 µm
- Ø = 453 µm
- Ø = 238 µm
- Ø = 221 µm

DURUM WHEAT ALEURONE
- Ø = 516 µm
- Ø = 63 µm
- Ø = 510 µm
- Ø = 210 µm
- Ø = 34 µm

SOFT WHEAT BRAN

WHOLE GRAIN CONCENTRATE

Whole Grain Summit 2015

HealthBread – HealthBread product innovation based on FP 6 Healthgrain results and knowledge. GA number: 312165
Funded by the 7th Framework Programme of the European Union, Collaborative Project.
KBBE.2012.2.3-02 – Exploitation of Framework Programme project results in food processing by small and medium-sized enterprises.
**Aimed outcome:**

Improve the bioaccessibility of bioactive compounds of bran/wheat fraction:

- +200% free ferulic acid - 50% phytic acid
- Without extensive arabinoxylan degradation
- Without compromising technological functionality (stickiness, bread quality)
HealthBread – HealthBread product innovation based on FP 6 Healthgrain results and knowledge. GA number: 312165
Funded by the 7th Framework Programme of the European Union, Collaborative Project.
KBBE.2012.2.3-02 – Exploitation of Framework Programme project results in food processing by small and medium-sized enterprises.
HEATH BREAD CRISPY ROLLS WITH >6% FIBER

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Whole Grain Summit 2015
Selection of FLOUR MIX

Base flour + wheat fraction (aleurone, whole grain concentrate)
Ratio e.g. 93/7 or 82/18

- high in fibre (>6%) and micronutrients,
- mild taste, light colour

Bioprocessed WHEAT FRACTION
i.e. fermentation 12-18h (by bakery or supplier)

DOUGH fermentation and baking
a) with bakery improvers (→ labelling)
b) with food grade enzymes (clean label)
c) without a) or b) (→ lower volume in some kind of bread); this option was adopted by the Italian bakers.

HEALTHBREAD APPLICATION

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Funded by the 7th Framework Programme of the European Union, Collaborative Project.
KBBE.2012.2.3-02 – Exploitation of Framework Programme project results in food processing by small and medium-sized enterprises.
Regulation (EC) 1924/2006

Nutrition claims used
- **High in fibre** (at least 6g / 100g product)
- **Source of** at least 2 of the micronutrients of concern: Fe, Mg, Zn, folate

Health claims used
- **Fe, Mg, Zn, folate** have “different important functions including contributing to the reduction of tiredness and fatigue, to normal muscle and immune system functions.” *(applying EFSA approved health claims)*
- Hardly used: Wheat bran fibre - ‘increases faecal bulk’ ‘accelerates faecal transit’
### HEALTHBREAD APPLICATION

#### Product development and market introduction by bakeries

<table>
<thead>
<tr>
<th>Bakery</th>
<th>Concept product</th>
<th>Market introduction</th>
<th>HealthBread fraction</th>
<th>Nutrition statements</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusè (It)</td>
<td>Salutello</td>
<td>June ’14</td>
<td>Wholegrain (WG) concentrate</td>
<td>Fibre, Fe, Mg, Zn, Vit. B9 (folate)</td>
<td>Fermentation: All bakeries included long and/or special fermentation e.g. -of HB fraction -of complete dough -using sourdough</td>
</tr>
<tr>
<td>Regazzoni (It)</td>
<td>FibraPiù</td>
<td>July ’14</td>
<td>Durum wheat aleurone</td>
<td>Fibre, Fe, Mg, Zn</td>
<td></td>
</tr>
<tr>
<td>Uijee (NL)</td>
<td>Origo Wit</td>
<td>Not interested in the product launching</td>
<td>WG concentrate</td>
<td>Fibre, Zn, Vit.B9</td>
<td></td>
</tr>
<tr>
<td>Kamstra (NL)</td>
<td>GoedBegin</td>
<td></td>
<td>Wheat aleurone</td>
<td>Fibre, Fe, Mg, B9</td>
<td></td>
</tr>
<tr>
<td>Ripken (D)</td>
<td>Vollwert Riese</td>
<td>June ’14</td>
<td>WG concentrate Pre-fermented</td>
<td>Fibre, Fe, Mg, Zn, Vit. B9 (folate)</td>
<td></td>
</tr>
<tr>
<td>Lasser (At)</td>
<td>Europa-Krusterl</td>
<td>June ’14</td>
<td>Wheat aleurone</td>
<td>Fibre, Fe, Mg, Zn, Vit. B9 (folate)</td>
<td></td>
</tr>
<tr>
<td>Kasses (At)</td>
<td>Vollwert Laib</td>
<td>June ’14</td>
<td>WG concentrate Pre-fermented</td>
<td>Fibre, Zn, Vit. B9</td>
<td></td>
</tr>
<tr>
<td>Boni (It) *</td>
<td>Healthbread Fiore</td>
<td>August ’14</td>
<td>Wholegrain concentrated</td>
<td>Fibre, P, Zn, Vit. B9 (folate)</td>
<td></td>
</tr>
<tr>
<td>Saccani (It) *</td>
<td>Healthbread Rosa</td>
<td>September ’14</td>
<td>Durum wheat aleurone</td>
<td>Fibre, P, Zn, Vit. B9 (folate)</td>
<td></td>
</tr>
</tbody>
</table>

* Volunteers, not partners.
Welcome to the short questionnaire:

- You received a FREE sample of your HealthBread product next to the bread you’ve bought and after that about the free sample you received;
- It will take 5 minutes of your time.

**Chapter: How to communicate Health to your customers**

- **High in fibre** (at least 6g / 100g product)
- **Source of at least 2 of the micronutrients of concern:** e.g. Fe, Mg, Zn, folate.

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5 bakeries + 2 more bakeries at the end of the project (Austria, Italy, Germany) ~ 1,000 consumers

Buyers of regular product received:

- free sample of HealthBread products;
- information on its nutrition and health benefits;
- on-line questionnaire: focus on taste, satisfaction, price acceptance.

Results indicated

- HealthBread products well appreciated
- Many consumers interested in buying HealthBread product for higher price than their standard product
- Both taste and health related information were appreciated,
- Also: 75% of replies: “I will recommend this to friends”
HealthBread – HealthBread product innovation based on FP 6 Healthgrain results and knowledge. GA number: 312165
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HEALTHBREAD APPLICATION
Nutritional and Communication Tool-Kit for the Bakers (III)

Assistance at the selling point to explain the nutritional benefits

APPENDIX 1. HEALTHGRAIN publications


3. Li, L., Ward, J., Dynkowska, W., \_and\_...
Projecting the roll up at each selling point

SWOT and Business Plan
**HEALTHBREAD APPLICATION**
Nutritional and Communication Tool-Kit for the Bakers (V)

---

### Nutritional Labelling

#### SALUTELLO®

<table>
<thead>
<tr>
<th>Valori nutrizionali</th>
<th>100 g</th>
<th><strong>DRI (%)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energia</strong></td>
<td>306 kcal</td>
<td>15%</td>
</tr>
<tr>
<td>Carbossidati</td>
<td>53.5 g</td>
<td></td>
</tr>
<tr>
<td>di cui zuccheri</td>
<td>2.3 g</td>
<td></td>
</tr>
<tr>
<td>Grassi</td>
<td>1.9 g</td>
<td></td>
</tr>
<tr>
<td>di cui saturi</td>
<td>0.4 g</td>
<td></td>
</tr>
<tr>
<td>Proteine</td>
<td>14.7 g</td>
<td></td>
</tr>
<tr>
<td>Sale</td>
<td>1.6 g</td>
<td></td>
</tr>
<tr>
<td>Fibre</td>
<td>7.8 g</td>
<td></td>
</tr>
<tr>
<td>Folati</td>
<td>40.3 μg</td>
<td>20%</td>
</tr>
<tr>
<td>Ferro</td>
<td>2.3 mg</td>
<td>16%</td>
</tr>
<tr>
<td>Magnesio</td>
<td>61.6 mg</td>
<td>16%</td>
</tr>
<tr>
<td>Zinco</td>
<td>2.4 mg</td>
<td>24%</td>
</tr>
</tbody>
</table>

* un panino SALUTELLO pesa circa 75 g

** DRI: % delle quantità giornaliere raccomandate per un adulto calcolate sulla base di un fabbisogno giornaliero di 2000 kcal. Il fabbisogno può essere diverso a seconda del sesso, dell'età e delle attività fisiche svolte.

---

#### FIBRAPRIU’

<table>
<thead>
<tr>
<th>Valori nutrizionali</th>
<th>100 g</th>
<th><strong>DRI</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energia</strong></td>
<td>227 kcal</td>
<td></td>
</tr>
<tr>
<td>Carbossidati</td>
<td>38.3 g</td>
<td></td>
</tr>
<tr>
<td>di cui zuccheri</td>
<td>1.1 g</td>
<td></td>
</tr>
<tr>
<td>Grassi</td>
<td>1.8 g</td>
<td></td>
</tr>
<tr>
<td>di cui saturi</td>
<td>0.3 g</td>
<td></td>
</tr>
<tr>
<td>Proteine</td>
<td>10.2 g</td>
<td></td>
</tr>
<tr>
<td>Sale</td>
<td>1.5 g</td>
<td></td>
</tr>
<tr>
<td>Fibre</td>
<td>8.4 g</td>
<td>25%</td>
</tr>
<tr>
<td>Ferro</td>
<td>3.5 mg</td>
<td></td>
</tr>
<tr>
<td>Magnesio</td>
<td>91.4 mg</td>
<td>24.4%</td>
</tr>
<tr>
<td>Zinco</td>
<td>2.1 mg</td>
<td>21%</td>
</tr>
</tbody>
</table>

* una fetta di FIBRAPRIU’ pesa circa 35 g; un panino FIBRAPRIU’ pesa circa 80 g

** DRI: % delle quantità giornaliere raccomandate per un adulto calcolate sulla base di un fabbisogno giornaliero di 2000 kcal. Il fabbisogno può essere diverso a seconda del sesso, dell'età e delle attività fisiche svolte.
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HEALTHBREAD APPLICATION
Product development

Salutello
Naturale, buono e sano!

Salutello combina il buon sapore ad un alto valore nutrizionale.

FIBRAPIÙ
Il pane buono ad alto contenuto di fibra

Alto contenuto di fibra
Fonte di acido flico (vitamina B9)
Fonte di importanti minerali come ferro, magnesio e zinco
Lunga fermentazione
Ricco di Aleurone: la parte migliore del chicco di grano
HEALTHBREAD APPLICATION
Product development

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