

**HOCHDORF®**

BEST PARTNER

**HOCHDORF Nutrition AG**



**VIOGERM<sup>+</sup>**  
the essence of life.

**AFECG**

**Journées CHEVREUL**

**Nouvelles Huiles – Nouveaux Usages**  
**Compléments nutritionnels, cosmétiques et produits alimentaires**

Paris (FIAP Jean Monnet)  
Mercredi 2 et jeudi 3 avril 2008

**VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects**

HOCHDORF Nutrition AG, Switzerland  
Marc Genet



## **VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects**

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**Sensory aspects of VIOGERM<sup>®</sup> wheat germ oil / consumer research 2007**

**Distribution channels and application fields of VIOGERM<sup>®</sup> wheat germ oil**



## VIOGERM® wheat germ oil: technological, nutritional and sensory aspects

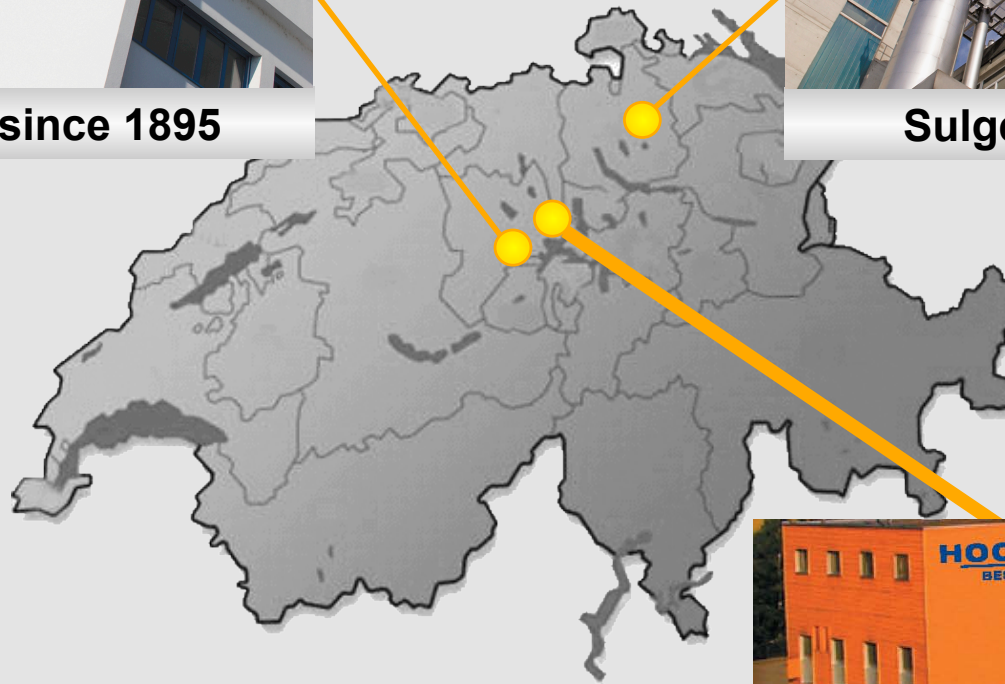
HOCHDORF Group / one production company on three different production sites



**Hochdorf – since 1895**



**Sulgen – since 2003**



**Steinhausen – since 2001**



## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

HOCHDORF Group / five sales companies with various fields of activities

### HOCHDORF Nutrition AG

**VIOGERM<sup>®</sup>-  
wheat germ and  
wheat germ oil**

- **VIOGERM<sup>®</sup>-  
extrudates and  
choco-crisps**
- **VIOGERM<sup>®</sup>-  
crisp-mix**
- **VIOGERM<sup>®</sup>-  
granola**
- **VIOGERM<sup>®</sup>-  
extracts**



### HOCHDORF Nutrifood AG

- **Sport and  
dietary  
products**
- **Breakfast  
drink powders**
- **Fruit and  
vegetable  
powders**



### HOCHDORF Nutricare AG

- **Infant and  
Baby food**



### HOCHDORF Swiss Milk AG

- **Whole milk,  
cream,  
skim milk  
powders  
(roller and  
spray dried)**
- **Special milk  
powders for  
food and  
feed industry**



### HOCHDORF Nutribake AG

- **Bread and  
bakery mixes  
and premixes**
- **Bread  
improvers**
- **Semi-finished  
products**
- **Fats and  
deep frying  
mediums**







## **VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects**

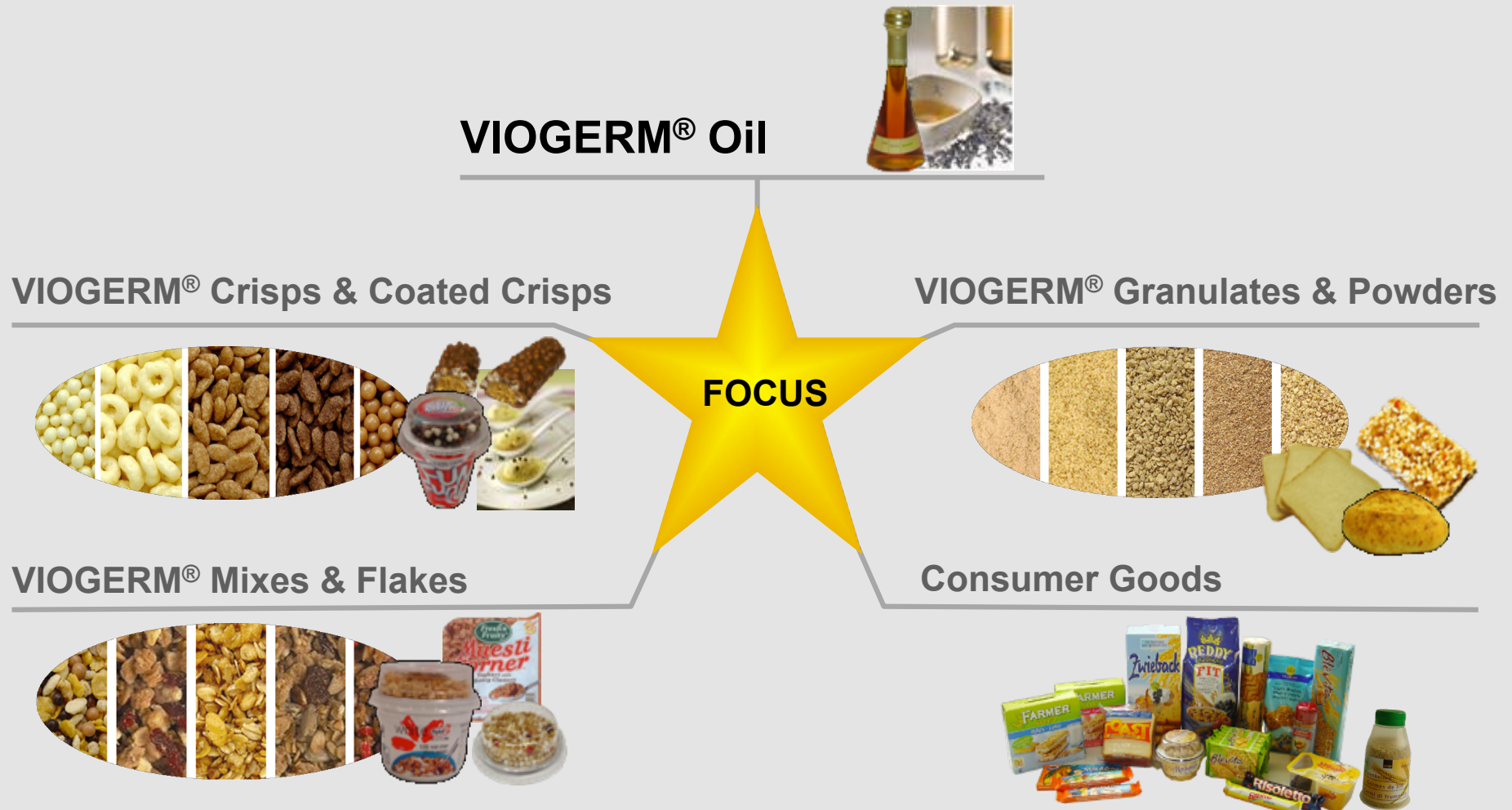
HOCHDORF Nutrition AG, founded 1946 as MULTIFORSA AG  
in Steinhausen (ZG), Switzerland  
the specialist in research and processing of wheat germs





## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

The strategic focus of HOCHDORF Nutrition AG is on five supporting pillars





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**Distribution channels and application fields of VIOGERM<sup>®</sup> wheat germ oil**

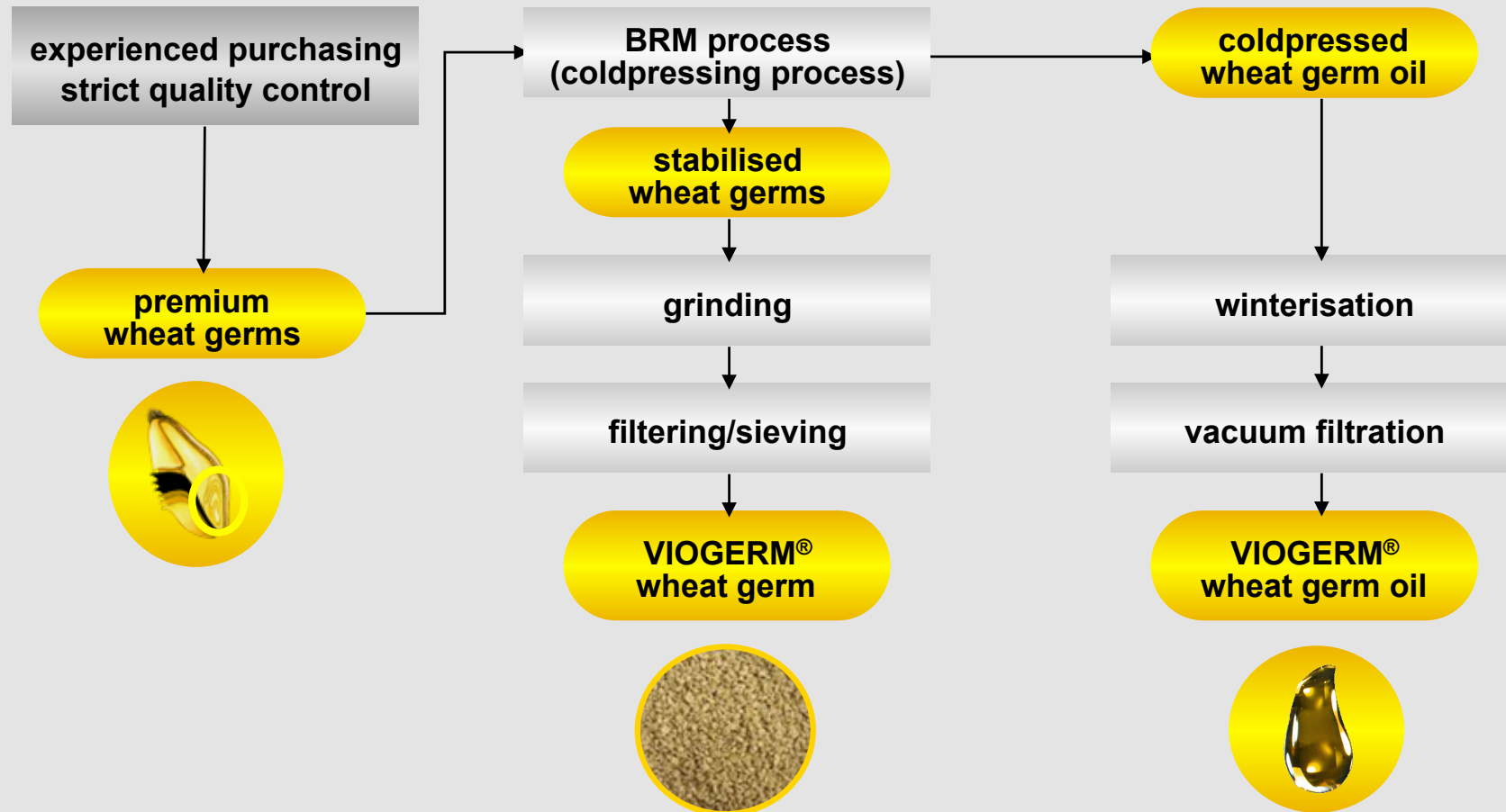


## VIOGERM® wheat germ oil: technological, nutritional and sensory aspects

18,000 kg wheat

→ 36 kg wheat germ granulate

→ 1 kg wheat germ oil

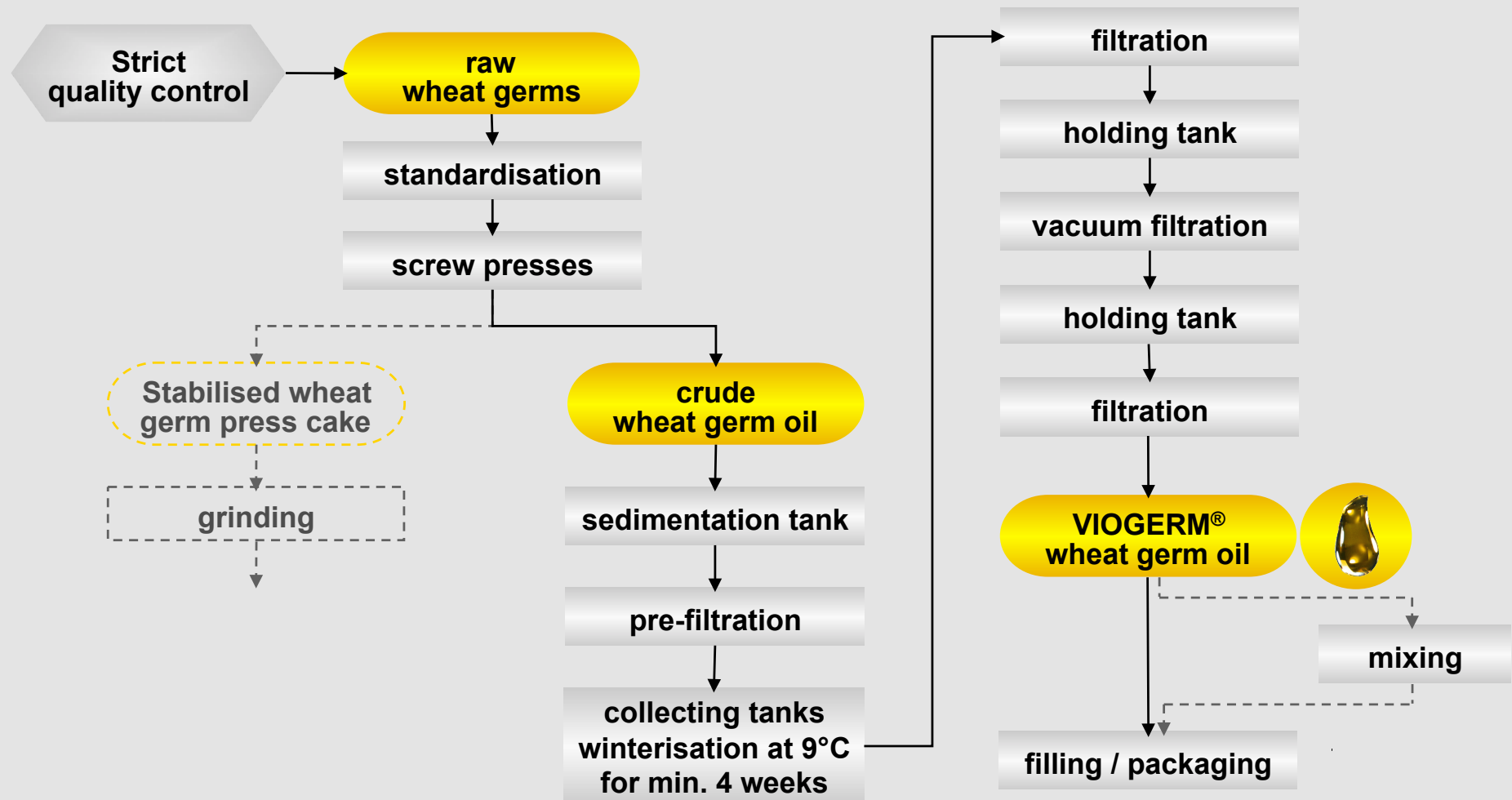






## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

Detailed production process of VIOGERM<sup>®</sup> wheat germ oil:





## **VIOGERM® wheat germ oil: technological, nutritional and sensory aspects**

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## VIOGERM® wheat germ oil: technological, nutritional and sensory aspects

### Fatty acid spectrum

	saturated fatty acids g/100g	mono- unsaturated fatty acids g/100g	poly- unsaturated fatty acids g/100g	Omega-6 Linoleic acid g/100g	Omega-3 alpha- Linolenic acid g/100g
<b>VIOGERM® wheat germ oil *)</b>	<b>19</b>	<b>14</b>	<b>67</b>	<b>58</b>	<b>9</b>
Wheat germ oil refined <sup>1)</sup>	19	15	65	57	8
Rapeseed oil cold pressed <sup>2)</sup>	7	63	30	23	7
Safflower oil refined <sup>3)</sup>	8	12	75	74	0.5
Sunflower oil refined <sup>3)</sup>	11	21	64	63	0.5
Olive oil extra vergine <sup>3)</sup>	14	72	9	8	0.9
Maize germ oil refined <sup>1)</sup>	13	29	53	52	1

\*) Analyses; <sup>1)</sup> Supplier specification; <sup>2)</sup> Swiss market sample; <sup>3)</sup> Souci, Fachmann, Kraut, 5<sup>th</sup> edition (1994)



## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

### Vitamin E

	Vitamin E mg/100g	Vitamin E IU/100g
<b>VIOGERM<sup>®</sup> wheat germ oil <sup>*)</sup></b>	<b>230</b>	<b>320</b>
Wheat germ oil refined <sup>1)</sup>	135	200
Rapeseed oil cold pressed <sup>2)</sup>	22	28
Safflower oil refined <sup>3)</sup>	44	64
Sunflower oil refined <sup>3)</sup>	63	92
Olive oil extra vergine <sup>3)</sup>	12	18
Maize germ oil refined <sup>1)</sup>	15	21

**RDA  
mg** **10**

<sup>\*)</sup> Analyses; <sup>1)</sup> Supplier specification; <sup>2)</sup> Swiss market sample; <sup>3)</sup> Souci, Fachmann, Kraut, 5<sup>th</sup> edition (1994)





## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

### Unsaponifiable components

	phytosterols mg/100g	phospholipids (lecithin) mg/100g	octacosanol mg/100g	cholesterol mg/100g
<b>VIOGERM<sup>®</sup> wheat germ oil <sup>*)</sup></b>	<b>3'000</b>	<b>400</b>	<b>10</b>	<b>0</b>
Wheat germ oil refined <sup>3)</sup>	550	0	0	0
Rapeseed oil refined <sup>3)</sup>	250	traces	no data	2
Safflower oil refined <sup>3)</sup>	444	traces	no data	no data
Sunflower oil refined <sup>3)</sup>	350	traces	no data	0
Olive oil extra vergine <sup>3)</sup>	110	traces	no data	no data
Maize germ oil refined <sup>3)</sup>	850	traces	no data	0

<sup>\*)</sup> Analyses; <sup>1)</sup> Supplier specification; <sup>2)</sup> Swiss market sample; <sup>3)</sup> Souci, Fachmann, Kraut, 5<sup>th</sup> edition (1994)



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## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

Consumer research 2007 – target group

**Test region:**

**Zurich**

**Number of  
Participants:**

**122**



All participants are consuming plant oils several times a month as a cold ingredient

**Sex**

- 58% women
- 42% men

**Age**

- 54% between 25 and 50 years old
- 46% over 50 years old

**Consumption**

- 58% mainly consuming olive oil
- 42% mainly consuming other plant oils than olive oil

**Households**

- 64% living in a household of 1-2 persons
- 32% living in a household of 3-4 persons
- 4% living in a household of 5 and more persons



## **VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects**

Consumer research 2007 – plant oils tested

- 1.) VIOGERM<sup>®</sup> wheat germ oil (100%)**
- 2.) VIOGERM<sup>®</sup> wheat germ oil (mix with refined wheat germ oil)**
- 3.) Rapeseed oil coldpressed**
- 4.) Olive oil extra virgine**
- 5.) Argan oil**
- 6.) omega3/omega6-oil-mix (rapeseed oil, olive oil, linseed oil, wheat germ oil)**





## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

Consumer research 2007 – plant oils tested



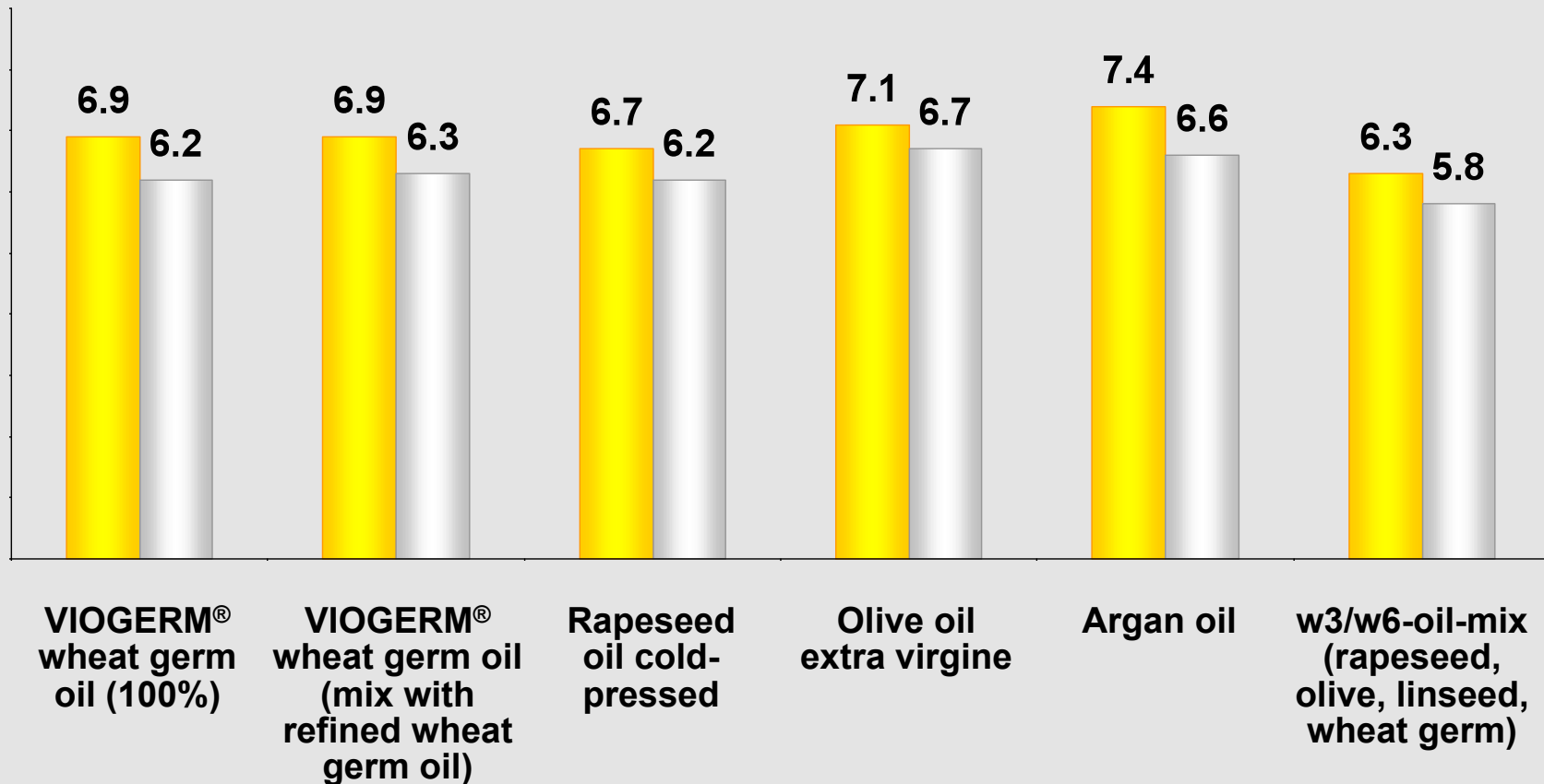


## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

Results: General acceptance branded / all participants (N = 122)

Hedonic  
scale

 Expectation  
 Taste



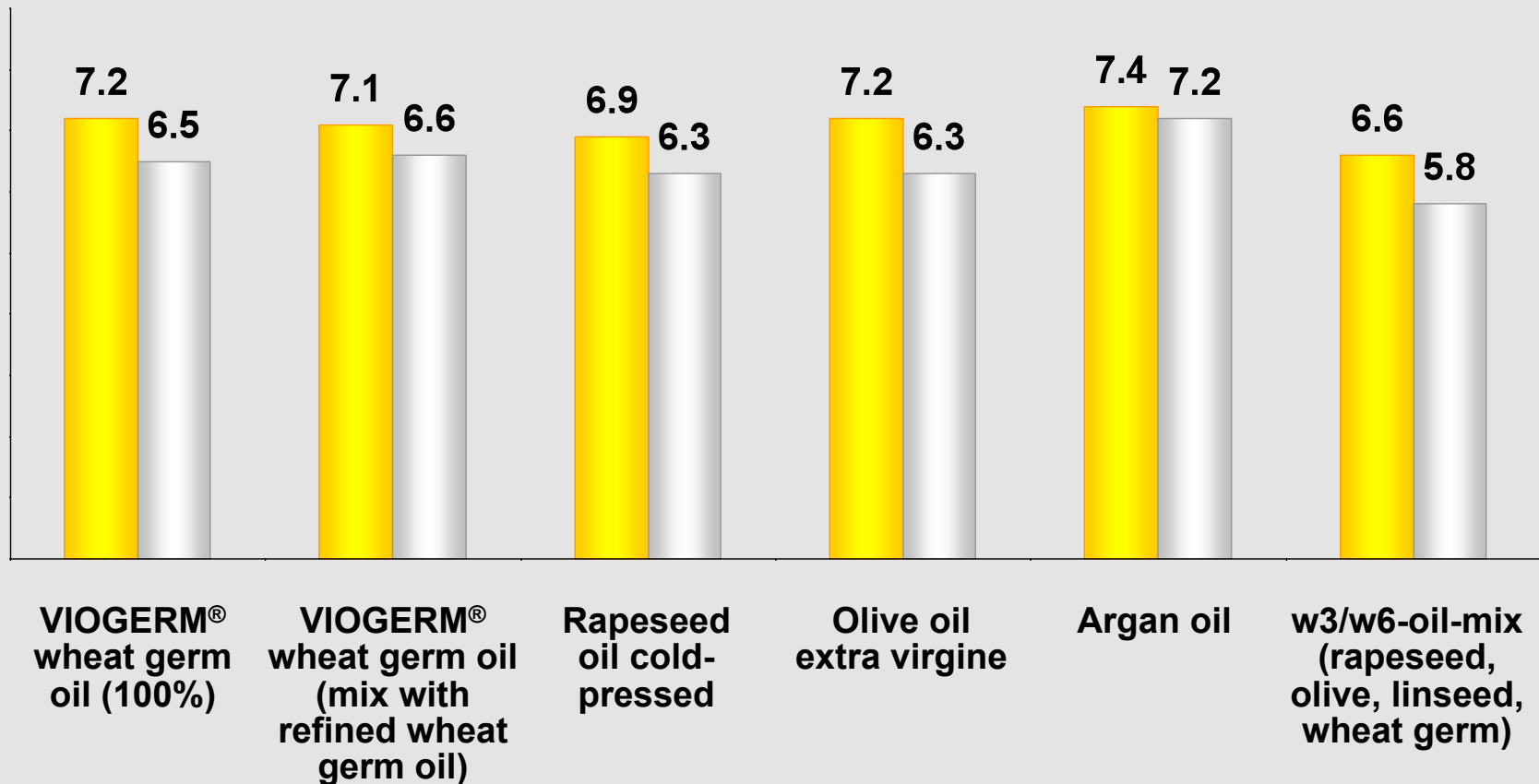


## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

Results: General acceptance branded / participants older than 50 years (N = 56)

Hedonic  
scale

Expectation  
Taste



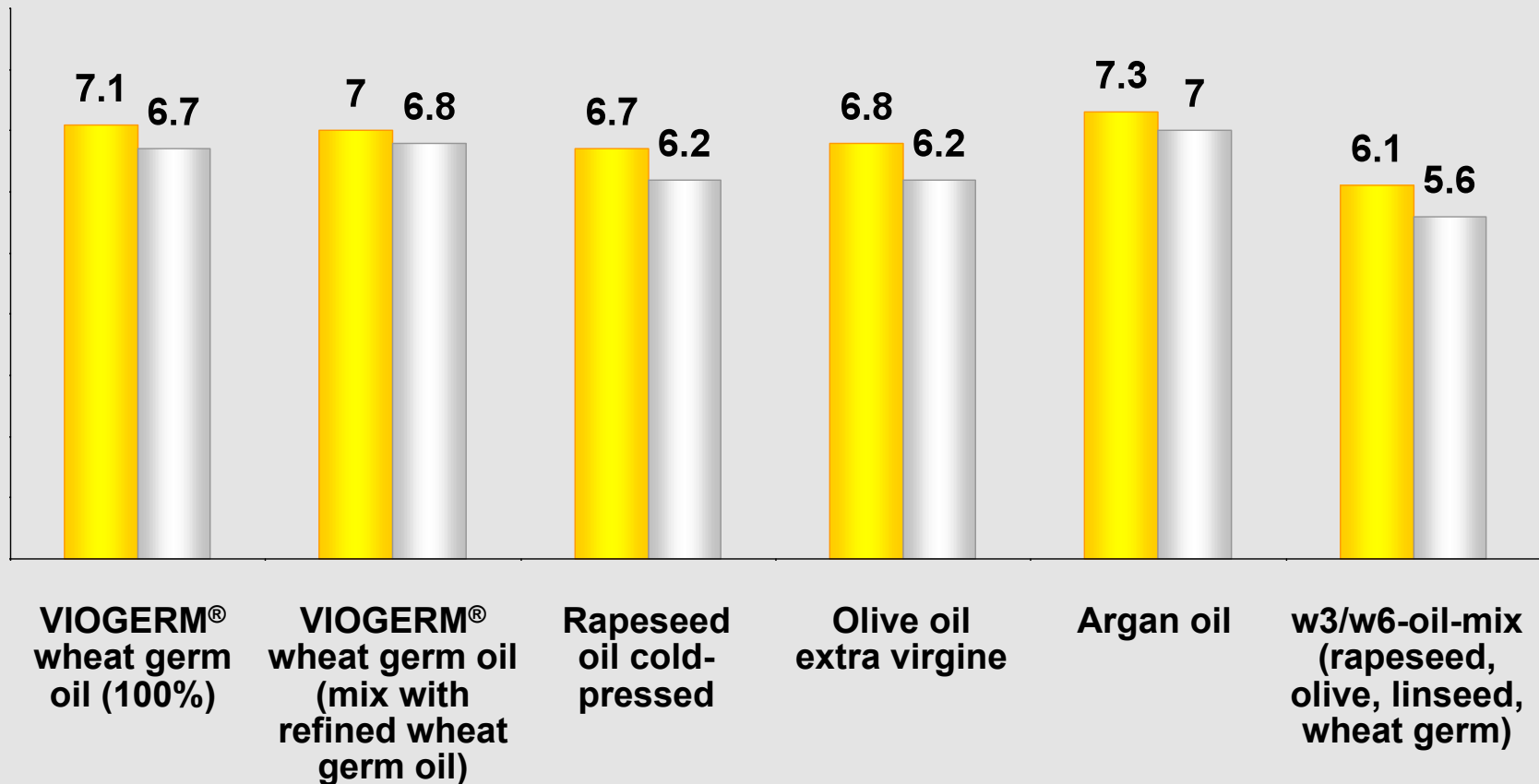


## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

Results: General acceptance branded / participants mainly consuming other oils than olive oil (N = 51)

Hedonic  
scale

 Expectation  
 Taste







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## VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects

**Food industry  
(as semi-finished  
product in bulk)**

- **Healthy toast bread** (*reason for use → Vitamin E, positive image of wheat germ*)
- **Salad dressings** (*reason for use → taste, health, emulsification*)
- **Oil mixes (w3/w6 oils, etc.)**  
(*reason for use → fatty acid spectrum, Vitamin E*)

**Retailers and  
chemist's shops  
(as finished product  
in bottles)**

- **Healthy enrichment and refinement of various foods**  
(salads, vegetables, pasta, meat, sausages etc.)  
(*reason for use → taste, health*)

**Cosmetic industry  
(as semi-finished  
product in bulk)**

- **As component of salves, lotions, shampoos, etc.**  
(*reason for use → wound healing, scar formation, Vitamin E, phospholipids*)



## **VIOGERM<sup>®</sup> wheat germ oil: technological, nutritional and sensory aspects**

### **summary**

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**THANK YOU  
FOR YOUR ATTENTION**

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