

# Consumer acceptance of the new ingredients: focus group approach

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# WP8 Consumer acceptance and products

## Task 8.1. – Focus group studies

### Objectives:

The main objective of WP8 is to evaluate the consumer acceptance of the new ingredients and developed products. This will include studies on consumers' perception, acceptance and willingness to pay the newly developed products.

- to investigate consumer' perception, acceptance and willingness to pay for the newly developed products including an analysis of purchases and consumption trends & decision making processes. A cross-country assessment is envisaged to identify behavioral attitude among countries.
- to elaborate a methodology for focus groups to obtain qualitative information from consumers and to generate input for new product development of food products with new ingredients.
- to establish criteria for selection and recruitment of participants.



## Purpose

The methodology was established in order to collect ideas regarding the valorisation of by-products (from different food production chains, such as: dairy, oilseeds, brewery, meat (poultry), prickly pear cactus) in new food products.

Focus groups: 'general population' and 'elderly group' (consumer segment above 60 years of age and without major health issues).

6 participants (gender balanced)

## Steps:

(1) Exploration of general knowledge on food by-products (25'-35')

(2) Exploration of food products with by-products (20'-30')

(3) Exploration of purchases and consumption trends & decision making processes (45'-55')



## Selection and recruitment criteria

- 2 focus groups in each of the four focal countries (i.e., Norway, Germany, Romania and Italy, 8 focus groups in total)
- one group consisting of 'general population' -**GP**
- one group consisting of 'elderly group' (**E**): above 60 years of age, without major health issues
- at least one or two people have already consumed food products containing by-products as ingredients.
- each focus groups will be heterogeneous in terms of their animal and plant based food consumption and consist of people who consume meat, avoid meat and vegetarians (or vegans).
- the participants are the **main decision makers about grocery/food shopping** or share this responsibility equally with another member of their household.
- Gender issues. Each focus group consisted in 6 participants and a moderator/assistant.



| COUNTRY:                                                    | ITALY                                                | GERMANY                                                     | ROMANIA             |
|-------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------|---------------------|
| <b>PARTICIPANTS:</b>                                        | N=6/group                                            | N=6/group                                                   | N=6/group           |
| <b>GROUPS</b>                                               | general population (GP)<br>Elderly (E)               |                                                             |                     |
| <b>BY-PRODUCTS:</b>                                         | Oilseeds, dairy, poultry, cactus                     |                                                             |                     |
| <b>FINDINGS</b>                                             |                                                      |                                                             |                     |
| <b>Cereal consumption</b>                                   | Once a week or more                                  |                                                             |                     |
| <b>Oilseeds consumption</b>                                 | 2-3 times a month/rare than once a month             |                                                             |                     |
| <b>Consumption of bread from different cereals/oilseeds</b> | 2-3 times week/<br>rarely than once a<br>month/never | <b>GP</b> -2-3 times/month<br><b>E</b> -once a week or more | Once a week or more |
| <b>Consumption of cactus by-products</b>                    | never                                                |                                                             |                     |



| COUNTRY:                                                  | ITALY                                                                                                                           | GERMANY                                                                                                                       | ROMANIA                                                                                                                                    |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Consumption of yogurts with a high protein content</b> | once a week or more/<br>2-3 times a month /never                                                                                | <b>rarely than once a month...never</b>                                                                                       | 2-3 times a month/<br>rarely than once a month                                                                                             |
| <b>Consumption of milk</b>                                | once a week or more                                                                                                             |                                                                                                                               |                                                                                                                                            |
| <b>Consumption of bread with a high fiber content</b>     | <b>GP:</b> 2-3 times a month/<br>rarely than once a month<br><b>E:</b> once a week or more/<br>less than once a month/<br>never | <b>GP:</b> 2-3 times a month/once per<br>month/rarely than once a month/<br>never<br><b>E:</b> rarely than once a month/never | <b>GP: once a week or more/</b> 2-3 times<br>a month/rarely than once a month<br><b>E:</b> once a week or more/rarely than<br>once a month |
| <b>By-products from the processing of poultry meat</b>    | 2-3 times a month/<br>rarely than once a month                                                                                  | <b>GP: never</b><br><b>E: rare than once a month/never</b>                                                                    | <b>GP:</b> 2-3 times a month/never<br><b>E:</b> rare than once a month/<br>2-3 times a month                                               |



## Stage 1: Exploration of general knowledge on food by-products (25'-35')

| General Population | What do you know about food by-products? Are these important? Can these be valorized? Do they contain important compounds for humans' health? Do you consider that they are useful? For what? |                                                                                                                                                                               |                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F                  | <b>IT:</b> useful for physical well-being, <b>reduction of food waste</b> and production of <b>innovative foodstuff</b> .                                                                     | <b>DE:</b> to <b>reduce food waste</b> , to <b>increase the nutritional value</b> of products (obesity), the use of by-products is important to achieve a sustainable economy | <b>RO:</b> Food by-products <b>increase the nutritional value</b> and <b>antioxidant</b> potential of the food product, containing bioactive compounds useful for human health. |
| M                  | <b>IT:</b> valorization to <b>reduce environmental impact</b> (depends on the <b>previous processing steps</b> )                                                                              | <b>DE:</b> depends on the <b>previous processing steps</b>                                                                                                                    | <b>RO:</b> Food by-products may contain important compounds for human health; recovery of compounds; valorisation.                                                              |



## Stage 1: Exploration of general knowledge on food by-products (25'-35')

**Elderly** What do you know about food by-products? Are these important? Can these be valorized? Do they contain important compounds for humans' health? Do you consider that they are useful? For what?

**F**

**IT:** to reduce waste, to be reused for cosmetic products, used as **supplements, cosmetics and more**

**DE:** to reuse, to avoid waste, **whey drinks and whey proteins are healthy**

**RO:** By-products can be re-introduced in the food system; they are important resources; can be capitalized; yes, they contain important nutrients; they are very useful; to **supplement** existing food resources and **not damage the environment**, plant by-products contain nutrients and fiber that can be useful in human nutrition or for dietary supplements

**M**

**IT:** to reduce the environmental impact, to improve food properties with beneficial effects on metabolism, to be re-used for **energy production**

**DE:** they might be useful and can be used in food products, but so far there is basically **nothing available in the market**, They are used as **animal feed** but some might also be edible for humans, re-used for **energy production**

**RO:** Source of ingredients with nutritional potential





## Stage 2: Exploration of food products with by-products (20'-30')

| General Population | <p>Have you heard about food products containing by-products or from by-products?<br/>                     Why would somebody use (want to use) or avoid to use by-products ?<br/>                     What are benefits and drawbacks could you expect from adding by-products in new foods or valorising by-products for extracting other ingredients ?</p> |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F                  | <p><b>IT:</b> They bring <b>benefits</b> to human health and <b>promote the circular economy</b>. The by-products have the <b>downside</b> of using <b>expensive extraction techniques</b>, the presence of <b>harmful substances</b> in by-products can be a drawback.</p>                                                                                   | <p><b>DE:</b> To increase the nutritional value of products, <b>strong marketing</b> is necessary; <b>to educate people</b>, to increase the dietary fiber content for a better digestion; to recycle the resources and reduce food waste.<br/> <b>Drawbacks:</b> there will be new food <b>intolerances/allergies; changes in texture, taste and color</b></p>                   | <p><b>RO: Benefits:</b> content in bioactive compounds, reduce waste; <b>increasing the nutritional value</b> of products; <b>diversification</b> of the range of food products, nutritionally superior products, obtaining new food products<br/> <b>Disadvantages: organoleptic changes, complex technological process, longer processing time;</b><br/> <b>Advantages:</b> possible consumer reluctance towards unfamiliar concepts.</p> |
| M                  | <p><b>IT:</b> The <b>extraction</b> of compounds from by-products must be done in a <b>safe way</b>.<br/> <b>Drawback:</b> the <b>presence of dangerous chemical molecules</b> and a high environmental impact.<br/> <b>Financial measures</b> can enhance the use of by-products</p>                                                                         | <p><b>DE:</b> "The idea of using extracted beneficial compounds sounds really good, but I personally prefer <b>less processed foods</b>". Instead of <b>extracting</b> one compound from for example oilseeds, it is preferable to add the by-products as they are. By-products may <b>have a big impact on taste and texture</b>.<br/> <b>A good marketing</b> is necessary.</p> | <p><b>RO: benefits:</b> to save resources, ensuring a high intake of target bioactive compounds/ingredients, minimizing food waste.<br/> <b>Disadvantages - Poor quality (appearance, taste).</b></p>                                                                                                                                                                                                                                       |



| Elderly | <p>Have you heard about food products containing by-products or from by-products?<br/>         Why would somebody use (want to use) or avoid to use by-products ?<br/>         What are benefits and drawbacks could you expect from adding by-products in new foods or valorising by-products for extracting other ingredients ?</p>                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F       | <p><b>IT:</b> the use of by-products can lead to <b>economic benefit</b></p>                                                                                                                                                                                                                                                                                                                        | <p><b>DE:</b> If they contain healthy ingredients, it might be a good idea to include them in common products like bread or pasta, as many people aren't eating healthy food on a regular basis, the colour of the products is important and must attract, I'm afraid that through addition with those compounds more <b>allergies/intolerances</b> will be created or that if we consume too much, we can observe negative effects because the daily recommendations were exceeded</p> | <p><b>RO: Benefits:</b> to reduce food waste, consumer information regarding the valuable nutritional content of these by-products (the information obtained from various researches should be widely disseminated for a more in-depth consumer awareness of the importance of these by-products); <b>recovering useful nutritional compounds;</b> enrichment in minerals, amino acids and fibers valuable for health)<br/> <b>Disadvantages - additional costs, separate logistics are needed, other waste remains after extraction.,</b> impairment of <b>sensory properties;</b> special technological process, additional expenses, personal training</p> |
| M       | <p><b>IT: Benefits:</b> To increase <b>the nutritional value</b> of products, reusing waste for functional food production, certainly economic savings.<br/> <b>Disadvantages:</b> compromise of the acceptability of a food due to its <b>sensory characteristics</b> (eg: unpleasant smell), cost, origin of the raw materials used; some damages these by-products could bring to our health</p> | <p><b>DE: Benefits:</b> to strengthen a <b>circular economy</b>, which will be good for the next generations<br/> <b>Disadvantages:</b> changes in the taste, a <b>strong marketing</b></p>                                                                                                                                                                                                                                                                                             | <p><b>RO: Benefits:</b> to reduce waste in the environment, food diversification<br/> <b>Disadvantages: perishable, possible contraindications (intolerances: lactose, gluten, ...; gelatin, etc.).</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Stage 3: Exploration of purchases and consumption trends & decision making processes (45'-55')

| General Population                                   | Write down all the examples that come to your mind of type of food products containing by-products?<br>Write down all the examples that come to your mind of type of compounds/ingredients extracted from by-products?<br>Rank products you would prefer to buy (1-the most likely to buy)<br>Rank products you would prefer to consume (1-the most likely to consume) |                                                                                                                                                                                                                       |                                                                                                                                              |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| F                                                    | <b>TO BUY/TO CONSUME</b><br><b>IT:</b> bran, bread high in fiber, flour enriched in proteins; <b>jams</b> with vitamins                                                                                                                                                                                                                                                | <b>TO BUY/TO CONSUME</b><br><b>DE:</b><br>1. whey, buttermilk/bread/pizza/vegan yogurts<br>2. protein drinks/whey drink<br>3. <b>meat products</b>                                                                    | <b>TO BUY/TO CONSUME</b><br><b>RO:</b><br>1. yogurt high in protein; whey protein powder<br>2. hemp flour; sausage<br>3. bread high in fiber |
| M                                                    | <b>TO BUY/TO CONSUME</b><br><b>IT:</b> <b>biscuit</b> high in fiber; protein bread, cereals with vitamins, <b>juices</b> with vitamins                                                                                                                                                                                                                                 | <b>TO BUY/TO CONSUME</b><br><b>DE:</b><br>1. bread with increased fiber/ protein-rich bread or other bakery products/bread with seeds<br>2. protein drinks made out of whey/ dairy products<br>3. <b>liver (beef)</b> | <b>TO BUY/TO CONSUME</b><br><b>RO:</b><br>1. yogurt high in protein; whey protein powder<br>2. hemp flour; sausage<br>3. bread high in fiber |
| <b>Others:</b> juices, bran, liver pate, canned meat |                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                       |                                                                                                                                              |



**Stage 3: Exploration of purchases and consumption trends & decision making processes  
(45'-55')**



**Elderly**

Write down all the examples that come to your mind of type of food products containing by-products?  
 Write down all the examples that come to your mind of type of compounds/ingredients extracted from by-products?  
 Rank products you would prefer to buy (1-the most likely to buy)  
 Rank products you would prefer to consume (1-the most likely to consume)

|                 |                                                                                                              |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>F</b></p> | <p><b>IT:</b><br/><b>TO BUY/TO CONSUME</b><br/>1 yogurt/cheese<br/>2 cheese/bakery products<br/>3 yogurt</p> | <p><b>DE:</b><br/><b>TO BUY/TO CONSUME</b><br/>1 whole grain bread/crackers or protein bars/<br/>citrus aroma for backing<br/>2 pasta/ enriched drinks/ bread or other<br/>bakery products/ liver products<br/>3 blood sausages/ milky fruit drinks</p> | <p><b>RO:</b><br/><b>TO BUY</b><br/>1-borscht-bors; Cedar cheese, bar with added hemp flour, dairy products,<br/>2- whey dairy product/ whey powder/bread crumbs/cereals/whole meal bread/brewer's yeast powder<br/>3-borscht/sesame paste/ vegetables,<br/>4-sugar cane molasses/fruits<br/><b>TO CONSUME</b><br/>1-cooked food (soup, borscht )/ fermented dairy products/bars with added functional ingredients (proteins, fibers, minerals).<br/>4-wholemeal bread</p> |
|-----------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                 |                                                                                                                                         |                                                                                                            |                                                                                                                                                                                                                                        |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>M</b></p> | <p><b>IT:</b><br/><b>TO BUY/TO CONSUME:</b><br/>1 cereal (contain bran)/cheese/yogurt<br/>2 yogurts (contains whey/bakery products)</p> | <p><b>DE:</b><br/>1 crispbread/bread<br/>2 blood sausages<br/>3 dairy products like drinks or yoghurts</p> | <p><b>RO:</b><br/><b>TO BUY</b><br/>1-liver spot/whey dairy product/blood sausage/bread with seeds, 2- dairy, 3-beer, 4-meat products<br/><b>TO CONSUME:</b><br/>1-liver pate/1-bread with seeds, 2-dairy, 3-beer, 4-meat products</p> |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## Stage 3: Exploration of purchases and consumption trends & decision making processes (45'-55')

### After explanations provided by the moderator

| General Population | Would you prefer these products to be supplemented with by-products from: dairy; oilseeds; brewery; meat; cactus. Please specify which type of by-products you would prefer. Please explain the reasons for your preference/opinion. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                               |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F                  | <p><b>IT:</b><br/>Oilseed, dairy, brewery, cactus</p> <p><b>Reasons:</b> Oilseed by-products traceability can be easily monitored</p>                                                                                                | <p><b>DE:</b><br/>Dairy, oilseed and brewery</p> <p><b>Reasons:</b> Bread is one of my staple foods and I think oilseed by-products can be easily integrated in that, brewery contains the amino acid lysine, which is important for vegans</p>                                                                                                                                                                                                                                                                                      | <p><b>RO:</b><br/>oleaginous by-products; dairy by-product (whey), cereals</p> <p><b>Reasons:</b> due to the fact that I already consume food products obtained from the processing of raw materials (milk and processed milk products, seeds)</p>                                                                            |
| M                  | <p><b>IT:</b><br/>Oilseed, dairy</p>                                                                                                                                                                                                 | <p><b>DE:</b><br/>Brewery, dairy, oilseed</p> <p><b>Reasons:</b> Contain reasonable amounts of both fiber and proteins, there are <b>many breweries in Germany, so reducing waste</b> in this industry seems right for me, The brewing industry is big in Germany, but as spent grains can be used as animal feed, I prefer dairy by-products, especially because I know that I like the taste, I have already eaten bread with that and I like the taste. Knowing about the beneficial ingredients only strengthened my opinion</p> | <p><b>RO:</b><br/>oleaginous by-products; dairy by-product (whey), cereals</p> <p><b>Reasons:</b><br/>-due to its high fiber content, polyunsaturated fatty acids, polyphenols, vitamins and due to its antioxidant, antimicrobial and anti-inflammatory properties; ease of integration of by-products into new products</p> |



**Stage 3: Exploration of purchases and consumption trends & decision making processes (45'-55')**  
**After explanations provided by the moderator**

| Elderly |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                    |                                                                                             |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| F       | <p><b>IT:</b> Dairy, oilseeds, brewery, meat, cactus</p> <p><b>Reason:</b><br/>I support the use of by-products if they meet safety standards</p>                                                                                                            | <p><b>DE:</b> oilseed, brewery</p> <p><b>Reason:</b> I baked a bread with spent grains myself, and really liked the malty flavor. But you can only rarely find bread with spent grains in the market or in bakeries; oilseeds can be added to a variety of products (pasta, bread, pizza, cake, cookies, probably drinks etc.)</p> | <p><b>RO:</b> dairy products</p> <p><b>Reason:</b> the effect on intestinal microflora</p>  |
| M       | <p><b>IT:</b> dairy, meat, brewery</p> <p><b>Reason:</b><br/>Because they have important biological functional properties linked mainly to the antitumor, antihypertensive, anti-inflammatory, antithrombotic and antioxidant immunomodulatory activity.</p> | <p><b>DE:</b> brewery, dairy, oilseed</p> <p><b>Reason:</b> Can be easily added in many bakery products and has beneficial compounds. High nutrient level. Cactus also sounds interesting, but does not grow here, and I think it is important to use locally produced waste first before importing other waste</p>                | <p><b>RO:</b> dairy by-products</p> <p><b>Reason:</b> whey contains nutrients, proteins</p> |



## CONCLUSIONS

### General aspects:

- All the recruited participants in both groups have heard about food products containing by-products or from by-products
- The participants considered that by-products are important and that their valorization is necessary as healthy compounds for humans' health can be recovered, to reduce waste, to diversify the food products and to minimize the environmental impact.
- The participants had knowledge about the bioactive compounds which can be recovered from by-products: fibers, proteins, antioxidants, fatty acids, minerals, vitamins.
- After the moderator provided supplementary information about the benefits and advantages regarding the valorization of by-products, the participants became more aware about by-products and their potential use.
- Cactus by-products were mentioned only in the focus groups in Italy; in the other countries the participants were not familiar with these.
- There were few differences between the countries, the groups (GP and E) and gender (F/M).



## CONCLUSIONS



- GP prefers **bread** or other **bakery** products enriched with fiber, **fruit juice** and **jams**. Only one mentioned **cure meats** products.
- E preferences are for **bakery** products, **fruit**, **milky** drinks, **yogurt**. Most E would like to eat products made with by-products from the **meat industry**.
- GP group had a **basic knowledge about the bioactive compounds** which can be recovered from by-products: fibers proteins, minerals, and vitamins but this was less observed in the E group.
- Within both groups, foodstuff they imagined to buy/consume would be satiable, good for digestion, for losing weight and supplying with vitamins without taking supplements.
- After the moderator provided supplementary information, the GP was found to be equally interested in the by-products from **dairy, oilseeds and breweries belonging to food chain in which traceability and safety that can be easily monitored**.
- In the elderly population, by-products from the **dairy** were preferred, followed by **brewery, oilseeds, and meat by-products**.
- **Only females participant mentioned her interest in cactus by-products (one from GP and 2 from E).**



- The GP group prefers **bread** or other **bakery** products, followed by **yoghurt** and **drinks**.
- In the E group, an equal amount of people preferred **bread, crackers and yoghurts/milky drinks**. Most participants did not want to eat products made with by-products from the meat industry.
- GP group had a **basic knowledge about the bioactive compounds** which can be recovered from by-products, but this was less observed in the E.
- After the moderator provided supplementary information the GP was found to be equally interested in the by-products from **dairy, oilseeds and breweries**, as they all seem to be easily integrated into bakery products and are rich in fibers and proteins. Some participants also took the local food waste production into their decision.
- E preferred by-products from the **oilseed** industry, followed by **dairy** and **brewery** by-products, which are all rich in proteins and fiber and can be used for baking (linseeds were mentioned).




- GP would prefer to buy: **yogurt** with high protein content; **bread, cereals, protein bars, sour/fermented dietary dairy products, whey protein** substance for building muscle mass.
- E would prefer to consume: **high protein yogurt, bread, meat, protein bar, bread, fermented products**.
- All the participants had a **basic knowledge about the bioactive compounds** which can be recovered from by-products.
- After the moderator provided supplementary information the E group participants mentioned that they would prefer by-products from **dairy or meat processing** as they are rich in proteins and calcium, compounds necessary for health after a specific age.
- GP participants mentioned that they would prefer to consume mostly **oleaginous** by-product which can be integrated into bakery products or protein bars.
- **Fermented products (vegetables, borsch, dairy)** are preferred due to the benefits for intestinal microbiota.







Ce înseamnă îmbogățit nutrițional?



Un aliment îmbogățit este un aliment suplimentat cu compuși bioctivi (proteine fibre, antioxidanți, minerale, vitamine, etc.) pentru a compensa pierderile acestor compuși în timpul procesării alimentelor.

| PROBA                          | M      | A10    | A15    | A20    | P10    | P15    | P20    | N10    | N15    | N20    |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Conținut proteic (%)           | 8.66   | 9.66   | 9.87   | 10.27  | 9.6    | 9.82   | 10.77  | 9.58   | 9.93   | 11.04  |
| Caluloză brută (%)             | 0.28   | 0.79   | 0.99   | 1.55   | 1.43   | 1.91   | 2.61   | 1.95   | 2.28   | 2.58   |
| Valoare energetică (kcal/100g) | 223.82 | 253.17 | 265.01 | 278.21 | 244.41 | 252.73 | 263.69 | 228.26 | 226.18 | 225.37 |

M - pâine din făină albă de grâu  
 A - cu adaos de (10, 15 și 20%) șrot obținut din semințe de Floarea Soarelui decojite 100%  
 P - cu adaos de (10, 15 și 20%) șrot obținut din semințe de Floarea Soarelui decojite 50%  
 N - cu adaos de (10, 15 și 20%) șrot obținut din semințe de Floarea Soarelui întregi cu coajă

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Care dintre produse l-ați alege pentru consum?  
 În cazul în care nu consumați pâine, vă rugăm, da-ți exemple de produse ce ar conține supradose și le-ați consuma. \*

M

A 10

A 15

A 20

P 10

