

EDUCATIONAL STANDARD – TRADITIONAL, INNOVATIVE AND SUSTAINABLE RAW MATERIALS/RESOURCES

I. GENERAL

This standard defines the content criteria of the database for traditional, innovative and sustainable raw materials and resources, developed within the framework of the E-Food project. The standard aims to develop educational content, guaranteeing an opportunity for its users to familiarize themselves with various processes and their application for food production.

In the sense of this document **DATA BASE FOR TRADITIONAL, INNOVATIVE AND SUSTAINABLE RAW MATERIALS/RESOURCES (DBTISRM)** are educational materials used by the partners in the project, and in the future also by the students in the partner universities, aiming to acquaint its users with different types of raw materials and resources used in food production.

DBTISRM consists of two related units – a table describing the main elements of the raw material/resource (name, country and region of origin, type of raw material, etc.) and a description of the raw material/resources presented in the form of a structure defined by this standard.

The main functions of **DBTISRM** are:

- Acquaintance of database users with the main characteristics of raw materials and resources - origin, physicochemical composition, opportunities for innovation and others;
- Analyzing and understanding the possibilities for innovation through the use of the relevant raw material, as well as the development of innovative food products based on the innovation of the raw material;
- Practical application of the acquired knowledge, skills and acquired professional competences;
- Analyzing, conceptualizing and realizing the educational goals and the learning content presented in the database;
- Conceptualizing and implementing integrative links between study subjects in one or more professional fields or between study disciplines or modules in the learning process at partner universities;

The following criteria should be applied when developing a **DBTISRM**:

- ✚ **A clearly defined target group** that will use the educational content presented in the database;
- ✚ **Clearly and accurately formulated purpose** for applying the database;
- ✚ **Information provision**, guaranteeing the fulfillment of the goals and tasks of the project, and at a

later stage the possibility of using the database in the education of students;

-  **Sufficiency of the information and application of appropriate forms for its presentation;**
-  **Appropriate visual presentation and illustration and completeness of content.**

II. MAIN STEPS FOR DEVELOPMENT OF DBTISRM

1. DRAFT PREPARATION	
Step 1	
1. Preparation	Defining the goals and objectives of the database. Development of the database structure.
Step 2	
1. Draft	The authors plan to prepare a draft. If several authors prepare individual elements of the database, the structuring process is led by the project coordinator.
2. Formatting	The relevant database structures are prepared and the necessary content adjustments are made.
3. Editing	This operation aims to achieve clarity, good organization, connectivity of the text in the database.
4. Audit	An internal or external auditor/reviewer reviews the prepared structure and content of the database.
5. Inclusion of the auditor's opinion	When correcting the database, its structure and content, the reviewer's notes are taken into account. The project coordinator makes the appropriate adjustments.
Step 3	
1. Preparation of final version and structure	A vision of the structure of the description of the materials in the database is drawn up. An example is being developed.
2. Selection of photos, illustrations, tables, graphs, charts and more	Selection of illustrations, tables, graphs, charts, reference and supplementary material to be used in the development of the particular product.
3. Initial layout	Review the original text of the material and place the graphic elements
4. Team review of design and initial layout	The team responsible for preparing the materials reviews and comments on all aspects of the design and evaluates how the text fits.
5. Check and audit	Compliance checks are made and changes are made if necessary.
6. Finalizing specifications	Finalization of the material and preparation for publication on the learning platform.
2. FINALIZATION AND PUBLICATION OF MATERIALS ON THE PLATFORM	
Step 1	
1. Text finalizing	The content of the material is being finalized.

2. Improvements to the design and layout of the final text	Finalizing design and text.
3. Final review by the team	The teams perform a final review before publication.
4. Final checks	Minor and non-essential changes may be made. Completing the files.
Step 2	
1. Internal audit	An internal audit is performed by a partner team member.
2. External audit	Selected materials are subject to an external audit by a specialist from practice or a professor from a university outside the partner countries.
3. Publish to the platform	The finished materials, which have been internally and externally audited, are published on the training platform.
Step 3	
1. Approbation and use of materials	Implementation of the prepared materials in order to identify errors, incorrect elements of the texts and graphic elements, inconvenience of navigation, etc. During the period of use, ongoing fixes and replacement of compromised files are allowed.
2. Adding changes to the file	Correction of the content of the teaching materials and aids based on the results of the approval (examination).

III. DATABASE STRUCTURE FOR TRADITIONAL, INNOVATIVE AND SUSTAINABLE RAW MATERIALS/RESOURCES


NAME OF THE RAW MATERIAL	<i>The name of the raw/recourse material is given in English.</i>	3 cm/4 cm photo of the raw material
SHORT DESCRIPTION OF THE RAW MATERIAL	<p><i>A brief description of the raw material/resource is made, including data on its type, origin, type (plant, animal, waste, microbial), data on the geographical region of origin (if any), the parts of the raw material that are used (leaves, stems, etc.).</i></p> <p>Volume: maximum up to 500 characters (with spaces); recommended – up to 350 characters (with spaces)</p>	
PHYSICAL- CHEMICAL CHARACTERISTICS	<p>Data on the physicochemical characteristics of the raw material/resource for food production are presented in tabular or descriptive form.</p> <p>Volume: maximum up to 600 characters (with spaces); recommended – up to 400 characters (with spaces)</p>	
SENSORIAL CHARACTERISTICS	<p>The main sensory characteristics are presented (in tabular or descriptive form)</p> <p>Volume: maximum up to 600 characters (with spaces); recommended – up to 400 characters (with spaces)</p>	
MICROBIOLOGICAL CHARACTERISTICS	<p>The main microbial characteristics are presented (in tabular or descriptive form)</p> <p>Volume: maximum up to 600 characters (with spaces); recommended – up to 400 characters (with spaces)</p>	
NUTRITIONAL AND HEALTH ASPECTS	<p>A description of the main nutritional and health characteristics of the raw material/resource is made.</p> <p>Volume: maximum up to 600 characters (with spaces); recommended – up to 400 characters (with spaces)</p>	
SAFETY CONCERNS	<p>The main safety concerns are presented (in tabular or descriptive form)</p> <p>Volume: maximum up to 600 characters (with spaces); recommended – up to 400 characters (with spaces)</p>	
HISTORY AND TRADITIONS FOR FOOD PRODUCTION	<p>The history of the origin of the raw material is presented, as is a description of the main traditions related to the use of the raw material/resource in food production.</p> <p>Volume: maximum up to 1000 characters (with spaces); recommended – up to 800 characters (with spaces)</p>	
NEW TRENDS, INNOVATIONS AND SUSTAINABILITY ASPECTS	<p>The possibilities for new trends, innovations and sustainable use of raw materials in the production of various food products are presented. Basic guidelines are given for using the raw material in new types of food and food products.</p> <p>Volume: maximum up to 1000 characters (with spaces); recommended – up to 800 characters (with spaces)</p>	
OTHER ASPECTS	<p>Volume: maximum up to 500 characters (with spaces); recommended – up to 350 characters (with spaces)</p>	

REFERENCES

For each process, up to 10 references are presented, formatted according to the requirements:

- Journal Articles:
 - ✓ Author 1, A.B.; Author 2, C.D. Title of the article. *Abbreviated Journal Name* **Year**, *Volume*, page range.
- Books and Book Chapters:
 - ✓ Author 1, A.; Author 2, B. Book Title, 3rd ed.; Publisher: Publisher Location, Country, Year; pp. 154–196.
 - ✓ Author 1, A.; Author 2, B. Title of the chapter. In Book Title, 2nd ed.; Editor 1, A., Editor 2, B., Eds.; Publisher: Publisher Location, Country, Year; Volume 3, pp. 154–196.
- Unpublished materials intended for publication:
 - ✓ Author 1, A.B.; Author 2, C. Title of Unpublished Work (optional). Correspondence Affiliation, City, State, Country. year, *status (manuscript in preparation; to be submitted)*.
 - ✓ Author 1, A.B.; Author 2, C. Title of Unpublished Work. *Abbreviated Journal Name* year, *phrase indicating stage of publication (submitted; accepted; in press)*.
- Websites:.,
 - ✓ Title of Site. Available online: URL (accessed on Day Month Year). Unlike published works, websites may change over time or disappear, so we encourage you create an archive of the cited website using a service such as [WebCite](#). Archived websites should be cited using the link provided as follows:
 - ✓ Title of Site. URL (archived on Day Month Year).

IV. SAMPLE DATABASE MATERIAL LAYOUT FOR TRADITIONAL, INNOVATIVE AND SUSTAINABLE RAW MATERIALS/RESOURCES

<p>NAME OF THE RAW MATERIAL/RESOURCE</p>	<p>BULGARIAN ROSE OIL</p>																					
<p>SHORT DESCRIPTION OF THE RAW MATERIAL</p>	<p>Bulgarian rose oil is extracted from the petals of one of the rarest flowers in the world, the Bulgarian Rose Damascena; which is only cultivated and harvested in the Rose Valley. Commercial use for rose oil is in fine perfumery, cosmetics and pharmacology. The blossom is mixed with water in a ratio of 1:4 to 1:5; this mixture is heated and is transformed by the steam and water into a boiling paste. The essential oils are cooled and conveyed into receiving flasks. Afterwards, rose oil is cohobated, separated, dehydrated and filtrated.</p>																					
<p>PHYSICAL- CHEMICAL CHARACTERISTICS</p>	<p>Bulgarian rose oil is with: rich aroma; pale, yellowish-green color; very good fixative qualities; long-lingering aroma; balanced composition of volatile substances and hydrocarbons. The chemical characteristics of Bulgarian rose oil are closely linked to the region's geographical traits and set it apart from rose oils produced in other parts of the world. These are: a 24-35 % citronellol content (compared with 39-49 % for producers elsewhere in the world); a ratio of citronellol to geraniol of 1, 1:2,5 (compared with 2,3:4,8 for producers elsewhere in the world); A distinguishing characteristic of Bulgarian rose oil is the presence of a great many typical components such as farnesol and geranyl acetate, and a low methyleugenol content</p> <table border="0" data-bbox="918 1157 1848 1326"> <thead> <tr> <th>Constituents</th> <th>Content (%)</th> <th>Constituents</th> <th>Content (%)</th> </tr> </thead> <tbody> <tr> <td>ETHANOL</td> <td>up to 3.0</td> <td>METHYLEUGENOL</td> <td>up to 2.0</td> </tr> <tr> <td>LINALOL</td> <td>1.0- 3.0</td> <td>FARNESOL</td> <td>at least 1.4</td> </tr> <tr> <td>PHENYLETHYL ALCOHOL</td> <td>up to 3.0</td> <td>HYDROCARBONS:</td> <td></td> </tr> <tr> <td>CITRONELLOL</td> <td>24.0-35.0</td> <td>C17 (heptadecane)</td> <td>1.0-2.5</td> </tr> </tbody> </table>		Constituents	Content (%)	Constituents	Content (%)	ETHANOL	up to 3.0	METHYLEUGENOL	up to 2.0	LINALOL	1.0- 3.0	FARNESOL	at least 1.4	PHENYLETHYL ALCOHOL	up to 3.0	HYDROCARBONS:		CITRONELLOL	24.0-35.0	C17 (heptadecane)	1.0-2.5
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	<p>NEROL 5.0-12.0 C19 (nonadecane) 8.0-15.0</p> <p>GERANIOL 13.0-22.0 C19 (nonadecene) 2.0-.,0</p> <p>GERANYL ACETATE up to 1.5 C21 (heneicosane) 3.0-5.5</p> <p>EUGENOL up to 2.5 C23 (tricosane) 0.5-1.5</p>
SENSORIAL CHARACTERISTICS	<p>External appearance: Oily transparent liquid.</p> <p>Colour: Yellow or yellowish green</p> <p>Smell: Characteristic aroma of roses</p>
MICROBIOLOGICAL CHARACTERISTICS	-
NUTRITIONAL AND HEALTH ASPECTS	The health benefits of bulgarian rose oil can be attributed to its properties as an antidepressant, antiphlogistic, antiseptic, antispasmodic, antiviral, aphrodisiac, astringent, bactericidal, cholagogue, cicatrisant, depurative, emenagogue, haemostatic, hepatic, laxative, nervine, stomachic and uterine substance.
SAFETY CONCERNS	<p>Although rose oil has a lot of healthy effects, there are some precautions that have to be taken into account:</p> <ul style="list-style-type: none"> • Rose absolute is considered safe as long as it is diluted before being applied to the skin. • Even after dilution, you should do a patch test to ensure that you do not suffer any allergic reaction. Rose absolute oil is very strong and might cause problems for sensitive skin. • Nursing mother, pregnant women and children are not advised to use rose absolute oil. • Avoid contact with the eyes or any other sensitive areas of the body.
HISTORY AND TRADITIONS FOR FOOD PRODUCTION	<p>Production of Bulgarian rose oil started in the 17th century. In the 18th and 19th centuries, Bulgaria became the main supplier to Europe's perfume industry. The Bulgarian rose oil has built up and maintained its international popularity and worldwide reputation by winning numerous awards at international exhibitions and fairs from the 1880 to the present. Before the Second World War, Bulgarian rose oil met 70-90 % of world demand for rose oil. Currently Bulgaria produces 1.5 to 2 tons annually, which meets 40-50 % of global demand. Bulgarian rose oil is with PGI.</p> <p>Rose oil and absolute are used extensively as flavor ingredients (usually in very low use levels) in fruit-type flavors. Food products in which they are used include alcoholic and nonalcoholic beverages, frozen dairy desserts, candy, baked goods, and gelatins and puddings. Reported average maximum use levels are generally below 0.0002% (2 ppm).</p>

<p>NEW TRENDS, INNOVATIONS AND SUSTAINABILITY ASPECTS</p>	<p>Damascus rose essential oil is a safe natural oil which has antioxidant, antifungal, and antibacterial activity. Therefore, this plant volatile oil and its related products can be used as safe natural compounds in the food industry. These products are safely usable in functional foods and/or as dietary supplements.</p> <p>The production of Bulgarian rose oil is a traditional occupation of the population of the Rose Valley. Over its more than 300-year history the local population has accumulated specialist knowledge of high-quality seed development and rose cultivation and brought technological innovation to the industry. The harvest takes place over a 20 to 30-day period and requires special skills: between several hours before daybreak and the early morning only blossoms with at least one open petal are picked with the sepals, without damaging the stem or the branches. Closed buds are left on the stem for later harvesting. Only experienced distillers are qualified to judge when the blossom is ready to be put in the stills, determine the ratio of blossom to water and decide the optimal distillation temperature. These skills are handed down from generation to generation and serve to improve the stills in which Bulgarian rose oil is made, ensuring a consistently high quality of the end product.</p>
<p>OTHER ASPECTS</p>	<p>-</p>
<p>REFERENCES</p>	<ol style="list-style-type: none"> 1. COUNCIL REGULATION (EC) No 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs ПОЗОВО МАСЛО' (BULGARSKO ROZOVO MASLO) EC No BG-PGI-0005-01050 – 26.10.2012 2. Khan, I.A., Abourashed, E.A. (2010). LEUNG'S ENCYCLOPEDIA OF COMMON NATURAL INGREDIENTS USED IN FOOD, DRUGS, AND COSMETICS, 3rd edition, John Wiley and Sons, Hoboken, New Jersey 3. Nasery, M., Hassanzadeh, M.K, Najaran, Z.T., Emami, S.A. (2016). Rose (Rosa × damascena Mill.) Essential Oils. In: Essential Oils in Food Preservation, Flavor and Safety (ed. by V. R. Preedy), Elsevier, 659–665 4. http://bulgarianroseotto.com/ 6. https://www.organicfacts.net/health-benefits/essential-oils/health-benefits-of-rose-essential-oil.html 5. https://healthyfocus.org/9-uses-for-rose-absolute-essential-oil/