The paper presents the results from anti-oxidant activity determination (AO), for a selected and studied group of plants products, in order to get new food supplements and cosmetics with high antioxidant properties designed to reduce oxidative stress (OS) and its negative consequences on the human body. From more than 15 plant extracts which have been studied in order to highlight the ones with increased antioxidant potential, we have selected five that possess the greatest antioxidant activity. Results which were obtained for antioxidant activity (AO>50%) and superoxide dismutase-type activity (SOD>5.5 U/mg), confirmed the working hypothesis, motivation and intention to use the plant products selected, for new dietary supplements, cosmetics and others.

Keywords: antioxidant activity, plant products, food supplements, cosmetics.

INTRODUCTION
Starting from research over the recently passed decades, that has brought to the forefront the importance of natural food, rich in antioxidant compounds and the need for supplementary external food substances that possess properties for reducing the excess of harmful free radicals (FR) (excess resulting from environmental pollution and processed food).

This paper presents the results from anti-oxidant activity determination (AO), for a selected and studied group of plants products, in order to get new food supplements and cosmetics with high antioxidant properties designed to reduce oxidative stress (OS) and its negative consequences on the human body.

Some of these products with high antioxidant activity and great tintorial properties can also be used in leather industry (such as Vaccinium myrtillus and Morus nigra).

EXPERIMENTAL
More than 15 plant extracts have been studied in order to highlight the ones with increased antioxidant potential; from these, five were selected as possessing the greatest antioxidant activity, which are presented in this paper together with other data on their chemical composition, whilst the results obtained were used for creating new food supplements and cosmetics having superior effects in preventing and treating many diseases and delaying aging processes.

Materials
The selected and further studied plant material is represented by:
-Blueberry (Vaccinium myrtillus) fruit (dried at 40°C and milled);
-Mulberry (Morus nigra) fruits (dried at 40°C and milled);
-Red grapeseed (Vitis vinifera) tailings (cabernet, dried at 40°C and milled);
-Sea buckthorn (Hippophae rhamnoides) fruit tailings (dried at 40°C and milled, obtained after cold pressing for sea buckthorn oil);
-Bitter cucumber (Momordica charantia) fruit (dried at 40°C and milled).

**Methods**

In order to determine the antioxidant activity, the extraction in water of the plant material was carried out at temperatures around 37°C for 30 minutes and continuously shaken; a solution was obtained by diluting the extract in pH 7.0 Tris buffer solution.

Antioxidant activity determination was carried out on the diluted samples (from 1:1 to 1:100 dilution), based on antioxidant activity using a biological method [1].

In this case all results for antioxidant activity determination were made at the optimal dilution of 1:10, and in the case of superoxide-dismutase (SOD) determination, the reaction was carried out on undiluted extracts. The AO determination method is well-known and it is based on the spectrophotometric determination at λ = 532 nm of malondialdehyde that comes from the reaction between ascorbic acid on guinea pig brain lipids, with the thiobarbituric acid.

Determination of SOD activity was done by the Winterbourn method [2], which is based on this type of enzyme’s capacity to inhibit the reduction by superoxide radicals of nitro-blue tetrazolium (NBT)- (chloride 2,2’ di (p-nitrophenyl)-5,5’-diphenyl- 3,3’ (dimethoxy-4,4’ diphenyl ditetrazolium) reagent.

**RESULTS AND DISCUSSION**

Using the described studied plant material processing, AO activity determination, and SOD methods, the following results were obtained, given in Table 1 and Table 2 respectively.

From the data in Table 1, it results that all the five samples analysed for AO, indicate an inhibition activity percent of more than 50% in a 1:10 dilution of the initial solution (0.1 g %), differences between them not being very large. The decreasing order is: Red grapeseed tailings > Blueberry fruit > Mulberry fruit > Sea buckthorn tailings > Bitter cucumber fruit for AO activity determination, where the Red grapeseed tailings have the highest antioxidant activity.

<table>
<thead>
<tr>
<th>No.</th>
<th>Sample name</th>
<th>AO activity % inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Red grape (Vitis vinifera) seed tailings</td>
<td>80.15</td>
</tr>
<tr>
<td>2.</td>
<td>Mulberry (Morus nigra) fruit</td>
<td>75.00</td>
</tr>
<tr>
<td>3.</td>
<td>Blueberry (Vaccinium myrtillus) fruit</td>
<td>76.85</td>
</tr>
<tr>
<td>4.</td>
<td>Sea buckthorn (Hippophae rhamnoides) fruit tailings</td>
<td>73.60</td>
</tr>
<tr>
<td>5.</td>
<td>Bitter cucumber (Momordica charantia) fruit</td>
<td>50.05</td>
</tr>
</tbody>
</table>

The red grapeseed tailings and the sea buckthorn fruit tailings have the advantage of being relatively inexpensive raw materials, being a food processing byproducts.
Regarding SOD-type activity, the values are relatively low, the highest value being sea buckthorn fruit tailings. In this case, the decreasing activity order is: Sea buckthorn tailings > Blueberry fruit > Red grapeseed tailings > Mulberry fruit > Bitter cucumber fruit (Table 2).

Table 2. Superoxide dismutase determination

<table>
<thead>
<tr>
<th>Sample name</th>
<th>Superoxide dismutase determination, U/mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red grape (Vitis vinifera) seed tailings</td>
<td>9.02</td>
</tr>
<tr>
<td>Mulberry (Morus nigra) fruit</td>
<td>8.90</td>
</tr>
<tr>
<td>Blueberry (Vaccinium myrtillus) fruit</td>
<td>10.10</td>
</tr>
<tr>
<td>Sea buckthorn (Hippophae rhamnoides) fruit tailings</td>
<td>11.30</td>
</tr>
<tr>
<td>Bitter cucumber (Momordica charantia) fruit</td>
<td>5.50</td>
</tr>
</tbody>
</table>

To justify the use of these plant materials for creating new food supplements with beneficial effects both in terms of AO activity and for the furnishing of essential nutrients and other useful natural compounds able to increase the human body’s immunity, determinations were then made for the following compounds: total proteins, lipids, sugars, enzymes, minerals, carotenoids, polyphenols, flavones, vitamins etc., whose presence was highlighted, in sufficient quantities for the intended purpose.

CONCLUSIONS

1. Results which were obtained for antioxidant activity (AO > 50%) and superoxide dismutase-type activity (SOD > 5.5 U/mg), confirmed the working hypothesis, motivation and intention to use the plant products selected, for new dietary supplements, cosmetics and others.
2. Experimental data also confirm, along with the AO and SOD-type properties, the presence of nutrients able to provide increased antioxidant properties for the reduction of oxidative stress (OS) on body.
3. Following the studies carried out, three cosmetic products were created based on the studied plant byproducts: cosmetics for nail care, heel and sole area care, and for excessive perspiration reduction.

REFERENCES
