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**A method of preparing an edible oil product having an increased shelf life and the edible oil product thereby obtained**

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(54) Title: A METHOD OF PREPARING AN EDIBLE OIL PRODUCT HAVING AN INCREASED SHELF LIFE AND THE EDIBLE OIL PRODUCT THEREBY OBTAINED

(57) Abstract: The invention relates to a method of preparing an edible oil product, particularly extra virgin olive oil, comprising inserting a predetermined number of whole olives into a given volume of the edible oil, the whole olives having a polyphenolic content ranging from 1 to 5 % of polyphenols on the total weight of the olives, wherein the whole olives, before being introduced into the edible oil, are subjected to irradiation with ionizing radiations at an absorbed dose comprised within the range of from 2.5 to 15 kgray.



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A method of preparing an edible oil product having an increased shelf life and the edible oil product thereby obtained

#### TECHNICAL FIELD

5

The invention relates to a method of preparing an edible oil, in particular extra-virgin olive oil, which benefits of an increased shelf life, as well as the edible oil obtainable by the method of the invention.

10

#### BACKGROUND

15

The discussion of the background to the invention that follows is intended to facilitate an understanding of the invention. However, it should be appreciated that the discussion is not an acknowledgement or admission that any aspect of the discussion was part of the common general knowledge as at the priority date of the application.

The European Regulation EU 432/2012 provides that polyphenols in extra-virgin olive oil contribute to the protection of blood lipids from oxidative stress.

20

In addition, the EFSA (European Food Safety Authority) has recognized that the olive oil polyphenols can prevent oxidative stress, have antioxidant effects, improve fat metabolism, protect the LDL fraction from oxidative damage.

25

The method of the invention and the product thereof are therefore the result of a study conducted by the inventors, in order to identify new strategies to improve the bio-nutritional and health quality of olive oil over time, with particular reference to the special phenolic compounds of olive oil.

30

The European patent EP 2416664 B (Costa d'Oro S.p.A.) discloses a method of preparing an edible oil in which the whole olives, before being introduced into the edible oil, are subjected to a treatment with an anti-mould agent, after which they are subjected to a

dehydration treatment such as to achieve the elimination of a quantity of water of between 7% and 15%.

5 The international patent application WO 99/52377 A (UNILEVER NV (NL); UNILEVER PLC (GB)) 21 October 1999 (10.21.1999) discloses a method of increasing the polyphenol content into olive oil by immersing whole olives in olive oil. WO 99/52377 A also discloses that such a transfer of the ingredients of the olive fruit from the fruit to oil can be further increased by means of a dehydration treatment which can increase the transport of the olive fruit ingredients from the fruit to the oil.

10 EFSTATHIOS Z. PANAGOUE: "Greek dry-salted olives: Monitoring the dry-salting process and subsequent physico-chemical and microbiological profile during storage under different packing conditions at 4 and 20°C", LWT – FOOD SCIENCE AND TECHNOLOGY, discloses a method of comprising the dehydration of olives up to the elimination of 21% water, followed by a treatment with potassium sorbate that increased the shelf life of the olives.

#### SUMMARY AND DESCRIPTION OF THE INVENTION

20 According to one form of the invention there is provided a method of preparing an edible oil product, comprising the following steps: - providing a given volume of edible oil;  
- inserting a predetermined number of whole olives into the above-mentioned volume of edible oil, the whole olives having a polyphenolic content ranging from 1 to 5 % of polyphenols on the total weight of the olives, wherein the whole olives, before being  
25 introduced into the edible oil, are subjected to irradiation with ionizing radiations at an absorbed dose comprised within the range of from 2.5 to 15 kgray.

The method according to the present invention advantageously allows increasing the final polyphenol content in the oil. The polyphenols contained in the olives are released over time  
30 within the volume of oil, playing the role of natural antioxidants.

Compared to the prior art methods, the irradiation with ionizing radiations is an extremely effective technology. Ionizing radiations are in fact able to destroy any bud, parasite, bacterium, virus or microorganism present in the olives which will subsequently be introduced into the edible oil. It has also been demonstrated that the irradiation with ionizing radiations does not cause the formation of toxic substances in processed foods. Consequently, the irradiation with ionizing radiations allows avoiding all the conventional treatments currently required for sterilization and microbiological safety.

10 The irradiation with ionizing radiations is also an extremely simple technology: the olives to be irradiated are arranged on a conveyor belt and passed under a beam of radiation emitted by cobalt 60 or by an electron generator. In the latter case, these are radiations of very short

wavelength (70nm) that break the DNA strands of organisms and microorganisms, whose replication is thus prevented.

As will be apparent from the examples that follow, the edible oil obtained with the method  
5 of the invention is also characterized by a higher polyphenol content compared to the same oil treated with the method disclosed in European patent EP 2416664 B of the prior art. An improvement in the state of preservation is also noted, measurable with the conventional parameters used for this purpose, i.e. the number of peroxides and the U.V. K232 and K270 spectrophotometric indices.

10

The organoleptic characteristics of the edible oil remain substantially stable over time or with a sensory score perceptibly better when examined by a Panel.

The invention also relates to the edible oil, in particular the extra-virgin olive oil, obtainable  
15 with the method of the invention, whose features are illustrated in detail in the example section.

In a preferred embodiment of the method of the invention, green olives before the onset of ripening are used, namely olives which have not yet reached the stage of complete ripening  
20 of the fruits, in which the epicarp color changes from a deep green color typical of olives not yet ripe, to a final color which can vary, depending on the cultivar, from red purple to black. The use of olives before the onset of ripening is preferable as they contain a higher amount of polyphenols compared to ripe olives and are therefore able to perform the best antioxidant function, in addition to providing a final product characterized by an improved visual  
25 appearance.

In another preferred embodiment of the method of the invention, the olives inserted into the edible oil belong to the Coratina cultivar, which among Italian cultivars is the richest in polyphenols.

30

In yet a further preferred embodiment, the method involves the use of a number of olives of from 1 to 4 per 1 litre of oil.

Even more preferably, the olives used in the method of the invention have a caliber of 20-22, expressed as the number of olives per 100 grams. Such a caliber has proved particularly suitable for use in technological automation processes for the insertion of the olives into the oil container, such as a bottle for oil having a neck diameter of about 35 mm.

5

The following examples are provided merely for non-limiting illustration of the scope of the invention as defined by the appended claims.

Example 1: microbiological analyses

10 Samples of Coratina olives were subjected to a treatment according to the prior art (referred to as "treatment 1") and to the treatment according to the present invention (referred to as "treatment 2").

Treatment 1: the olives were subjected to partial dehydration in a stove at 120 °C to remove  
15 10% of water from the fruits.

Treatment 2: the olives were subjected to irradiation with ionizing radiations at an absorbed dose of 4.5 kgray.

20 Table 1A below (where t = time) shows the values of the microbiological parameters measured in the olives subjected to treatment 1 and in the preserving oil thereof, at time zero, after 6 months and after 1 year from the insertion of the olives into the oil.

25 Table 1 B below (where t = time) shows the values of the microbiological parameters measured in the olives subjected to treatment 2 and in the preserving oil thereof, at time zero, after 6 months and after 1 year from the insertion of the olives into the oil.

Table 1 A:

|  | Treatment 1 |                   |                 | Preserving oil |                |                 |
|--|-------------|-------------------|-----------------|----------------|----------------|-----------------|
|  | t.<br>zero  | t.<br>6<br>months | t.<br>12 months | t.<br>zero     | t.<br>6 months | t.<br>12 months |
|  |             |                   |                 |                |                |                 |



|                      |     |     |     |     |     |     |
|----------------------|-----|-----|-----|-----|-----|-----|
| Spores of clostridia | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
|----------------------|-----|-----|-----|-----|-----|-----|

From the microbiological analysis shown in Table 1, it is clear that both treatments carried out on the olives are effective and able to maintain a proper microbiological stabilization of the fruit in oil, and that there is no risk of contamination of the preserving oil.

5

Example 2: analysis of the release of antioxidants and evaluation of the shelf life effect and of the organoleptic characteristics of the oil

On the basis of microbiological results obtained in example 1, control tests of the main physical-chemical parameters of the same extra-virgin olive oil were carried out, with the addition of whole olives treated with the method of the present invention ("treatment 2") or with the prior art method referred to as "treatment 1".

The extra-virgin olive oil as such (AS), without addition of whole olives, was used as a control.

The results are shown in the following Table 2.

Table 2:

| <b>TIME ZERO</b>           |          |  |  |
|----------------------------|----------|--|--|
|                            | OIL A.S. | Oil + 1 olive<br>Coratina<br>Treatment 1 | Oil + 1 olive<br>Coratina<br>Treatment 2 |
| Acidity                    | 0.25     | 0.25                                     | 0.25                                     |
| N. peroxides               | 6.0      | 6.0                                      | 6.0                                      |
| K 232                      | 1.65     | 1.65                                     | 1.65                                     |
| K 270                      | 0.10     | 0.10                                     | 0.10                                     |
| DELTA K                    | 0.00     | 0.00                                     | 0.00                                     |
| Panel Test                 | Fruity   | Fruity                                   | Fruity                                   |
| Total polyphenols<br>(ppm) | 230      | 230                                      | 230                                      |

| <b>AFTER 2 MONTHS</b>         |          |  |  |
|-------------------------------|----------|--|--|
|                               | OIL A.S. | Oil + 1 olive<br>Coratina<br>Treatment 1 | Oil + 1 olive<br>Coratina<br>Treatment 2 |
| Acidity                       | 0.25     | 0.25                                     | 0.25                                     |
| N. peroxides                  | 7.2      | 6.5                                      | 6.3                                      |
| K 232                         | 1.70     | 1.67                                     | 1.65                                     |
| K 270                         | 0.12     | 0.10                                     | 0.10                                     |
| DELTA K                       | 0.00     | 0.00                                     | 0.00                                     |
| Panel Test                    | Fruity   | Fruity                                   | Fruity                                   |
| Total<br>polyphenols<br>(ppm) | 230      | 241                                      | 262                                      |
| <b>AFTER 4 MONTHS</b>         |          |  |  |
|                               | OIL A.S. | Oil + 1 olive<br>Coratina<br>Treatment 1 | Oil + 1 olive<br>Coratina<br>Treatment 2 |
| Acidity                       | 0.25     | 0.25                                     | 0.25                                     |
| N. peroxides                  | 8        | 6.8                                      | 6.7                                      |
| K 232                         | 1.77     | 1.69                                     | 1.67                                     |
| K 270                         | 0.12     | 0.10                                     | 0.10                                     |
| DELTA K                       | 0.00     | 0.00                                     | 0.00                                     |
| Panel Test                    | Fruity   | Fruity                                   | Fruity                                   |
| Total<br>polyphenols<br>(ppm) | 230      | 251                                      | 272                                      |

| <b>AFTER 6 MONTHS</b> |          |  |  |
|-----------------------|----------|--|--|
|                       | OIL A.S. | Oil + 1 olive<br>Coratina<br>Treatment 1 | Oil + 1 olive<br>Coratina<br>Treatment 2 |

|                         |        |        |        |
|-------------------------|--------|--------|--------|
| Acidity                 | 0.25   | 0.25   | 0.25   |
| N. peroxides            | 8.8    | 7.2    | 6.9    |
| K 232                   | 1.80   | 1.72   | 1.70   |
| K 270                   | 0.13   | 0.10   | 0.10   |
| DELTA K                 | 0.00   | 0.00   | 0.00   |
| Panel Test              | Fruity | Fruity | Fruity |
| Total polyphenols (ppm) | 230    | 264    | 283    |

**AFTER 8 MONTHS**

|                         | OIL A.S. | Oil + 1 olive Coratina Treatment 1 | Oil + 1 olive Coratina Treatment 2 |
|-------------------------|----------|------------------------------------|------------------------------------|
| Acidity                 | 0.25     | 0.25                               | 0.25                               |
| N. peroxides            | 9.2      | 7.7                                | 7.0                                |
| K 232                   | 1.84     | 1.75                               | 1.72                               |
| K 270                   | 0.13     | 0.10                               | 0.10                               |
| DELTA K                 | 0.00     | 0.00                               | 0.00                               |
| Panel Test              | Fruity   | Fruity                             | Fruity                             |
| Total polyphenols (ppm) | 230      | 272                                | 298                                |

**AFTER 10 MONTHS**

|              | OIL A.S. | Oil + 1 olive Coratina Treatment 1 | Oil + 1 olive Coratina Treatment 2 |
|--------------|----------|------------------------------------|------------------------------------|
| Acidity      | 0.25     | 0.25                               | 0.25                               |
| N. peroxides | 9.2      | 8.0                                | 7.3                                |
| K 232        | 1.87     | 1.78                               | 1.74                               |

|                         |        |        |        |
|-------------------------|--------|--------|--------|
| K 270                   | 0.14   | 0.11   | 0.11   |
| DELTA K                 | 0.00   | 0.00   | 0.00   |
| Panel Test              | Fruity | Fruity | Fruity |
| Total polyphenols (ppm) | 230    | 288    | 312    |

| <b>AFTER 12 MONTHS</b>  |          |   |  |
|-------------------------|----------|---|--|
|                         | OIL A.S. | Oil + 1 Coratina olive<br>Treatment 1 - in<br>stove | Oil + 1 Coratina olive<br>Treatment 2 - ionizing |
| Acidity                 | 0.25     | 0.26  | 0.26   |
| N. peroxides            | 10.5     | 9.0   | 7.9  |
| K 232                   | 1.87     | 1.82  | 1.76   |
| K 270                   | 0.14     | 0.12  | 0.11   |
| DELTA K                 | 0.00     | 0.00  | 0.00   |
| Panel Test              | Fruity   | Fruity  | Fruity   |
| Total polyphenols (ppm) | 230      | 309   | 322  |

The results show that:

(i) The olive subjected to treatment 1 is able to improve the oil storage conditions to which it is added, compared to oil as such. This is determined by the partial release of the polyphenols contained in olive oil into the oil. Polyphenols are in fact strong antioxidants.

(ii) The olive subjected to treatment 2 is able to improve the oil storage conditions to which it is added, both as compared to oil as such and as compared to the oil samples containing the olive subjected to treatment 1. This is determined by the fact that the olive is able to release into the oil a greater amount of polyphenols compared to the olive subjected to treatment 1.

Therefore, the olive treated with ionizing radiations according to the present invention has an even more effective and ameliorative effect on the oil shelf life, compared to the olive treated by partial dehydration according to the prior art.

5 Example 3:

The European Regulation EU 432/2012 states that the indication of the beneficial health effect of polyphenols can be put on the label only if the product contains at least 250 mg/kg of hydroxytyrosol and derivatives thereof (e.g. oleuropein and tyrosol; lignans should be  
10 excluded from total biophenols). The indication must be accompanied by the information to the consumer that "the beneficial effect is obtained with a daily intake of 20 g of olive oil".

For this reason, on the samples subjected to the tests of Table 2, further investigation was carried out with regard to the analysis of polyphenols alone. These investigations consisted  
15 in performing the analysis of polyphenols with the HPLC technique. The HPLC technique in fact allows eluting the polyphenols and separating them into individual classes. This allows verifying whether in the total polyphenols released by the olive into the oil, the classes of compounds for which it is possible to claim the health benefit, i.e. hydroxytyrosol, tyrosol and derivatives thereof, as listed from 1 to 7 in Table 3 below, are actually present.

20

Table 3:

| <b>TIME ZERO</b>                                  |                 |                               |
|---|-----------------|-------------------------------|
|   | <b>OIL A.S.</b> | <b>Oil + 1 Coratina olive</b> |
| Total polyphenols                                 | <b>230</b>      | <b>230</b>                    |
| 1 - Tyrosol (p, HPEA)                             | 5               | 5                             |
| 2 - Hydroxytyrosol (3,4 DHPEA)                    | 6               | 6                             |
| 3 - Decarboxy oleuropein aglycone (3,4 DHPEH-EDA) | 45              | 45                            |
| 4 - Decarboxy ligstroside aglycone (p, HPEA-EDA)  | 67              | 67                            |
| 5 - Oleuropein aglycone (3,4 DHPEA-EA)            | 75              | 75                            |

|  |            |            |
|--|------------|------------|
| 6 - Ligstroside aglycone (p, HPEA-EA)    | 22         | 22         |
| 7 - Lignans                              | 10         | 10         |
|  |            |            |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b> | <b>220</b> | <b>220</b> |

| <b>AFTER 2 MONTHS</b>                                |            |                           |
|--|------------|---------------------------|
|  | OIL A.S.   | Oil + 1 olive<br>Coratina |
| Total polyphenols                                    | <b>230</b> | <b>262</b>                |
| 1 - Tyrosol (p, HPEA)                                | 5          | 8                         |
| 2 - Hydroxytyrosol (3,4 DHPEA)                       | 6          | 10                        |
| 3 - Decarboxy oleuropein aglycone<br>(3,4 DHPEH-EDA) | 45         | 45                        |
| 4 - Decarboxy ligstroside aglycone (p,<br>HPEA-EDA)  | 67         | 67                        |
| 5 - Oleuropein aglycone (3,4 DHPEA-<br>EA)           | 75         | 88                        |
| 6 - Ligstroside aglycone (p, HPEA-EA)                | 22         | 34                        |
| 7 - Lignans  | 10         | 10                        |
|  |            |                           |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b>             | <b>220</b> | <b>252</b>                |

| <b>AFTER 4 MONTHS</b>                                |            |                           |
|--|------------|---------------------------|
|  | OIL A.S.   | Oil + 1 olive<br>Coratina |
| Total polyphenols                                    | <b>230</b> | <b>272</b>                |
| 1 - Tyrosol (p, HPEA)                                | 5          | 10                        |
| 2 - Hydroxytyrosol (3,4 DHPEA)                       | 6          | 14                        |
| 3 - Decarboxy oleuropein aglycone<br>(3,4 DHPEH-EDA) | 45         | 43                        |

|  |            |            |
|--|------------|------------|
| 4 - Decarboxy ligstroside aglycone (p, HPEA-EDA) | 67         | 70         |
| 5 - Oleuropein aglycone (3,4 DHPEA-EA)           | 75         | 90         |
| 6 - Ligstroside aglycone (p, HPEA-EA)            | 22         | 35         |
| 7 - Lignans                                      | 10         | 10         |
|  |            |            |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b>         | <b>220</b> | <b>262</b> |

| <b>AFTER 6 MONTHS</b>                             |            |                           |
|---|------------|---------------------------|
|   | OIL A.S.   | Oil + 1 olive<br>Coratina |
| Total polyphenols                                 | <b>230</b> | <b>283</b>                |
| 1 - Tyrosol (p, HPEA)                             | 5          | 11                        |
| 2 - Hydroxytyrosol (3,4 DHPEA)                    | 6          | 15                        |
| 3 - Decarboxy oleuropein aglycone (3,4 DHPEH-EDA) | 45         | 48                        |
| 4 - Decarboxy ligstroside aglycone (p, HPEA-EDA)  | 67         | 68                        |
| 5 - Oleuropein aglycone (3,4 DHPEA-EA)            | 75         | 95                        |
| 6 - Ligstroside aglycone (p, HPEA-EA)             | 22         | 36                        |
| 7 - Lignans                                       | 10         | 9                         |
|   |            |                           |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b>          | <b>220</b> | <b>273</b>                |

| <b>AFTER 8 MONTHS</b> |            |                           |
|-----------------------|------------|---------------------------|
|                       | OIL A.S.   | Oil + 1 olive<br>Coratina |
| Total polyphenols     | <b>230</b> | <b>298</b>                |
| 1 - Tyrosol (p, HPEA) | 5          | 12                        |

|   |            |            |
|---|------------|------------|
| 2 - Hydroxytyrosol (3,4 DHPEA)                    | 6          | 16         |
| 3 - Decarboxy oleuropein aglycone (3,4 DHPEH-EDA) | 45         | 56         |
| 4 - Decarboxy ligstroside aglycone (p, HPEA-EDA)  | 67         | 68         |
| 5 - Oleuropein aglycone (3,4 DHPEA-EA)            | 75         | 96         |
| 6 - Ligstroside aglycone (p, HPEA-EA)             | 22         | 38         |
| 7 - Lignans                                       | 10         | 12         |
|   |            |            |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b>          | <b>220</b> | <b>286</b> |

| <b>AFTER 10 MONTHS</b>                            |            |                        |
|---|------------|------------------------|
|   | OIL A.S.   | Oil + 1 olive Coratina |
| Total polyphenols                                 | <b>230</b> | <b>312</b>             |
| 1 - Tyrosol (p, HPEA)                             | 5          | 13                     |
| 2 - Hydroxytyrosol (3,4 DHPEA)                    | 6          | 16                     |
| 3 - Decarboxy oleuropein aglycone (3,4 DHPEH-EDA) | 45         | 60                     |
| 4 - Decarboxy ligstroside aglycone (p, HPEA-EDA)  | 67         | 67                     |
| 5 - Oleuropein aglycone (3,4 DHPEA-EA)            | 75         | 100                    |
| 6 - Ligstroside aglycone (p, HPEA-EA)             | 22         | 44                     |
| 7 - Lignans                                       | 10         | 12                     |
|   |            |                        |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b>          | <b>220</b> | <b>310</b>             |

| <b>AFTER 12 MONTHS</b> |          |               |
|------------------------|----------|---------------|
|                        | OIL A.S. | Oil + 1 olive |
|                        |          |               |

|   |            | Coratina   |
|---|------------|------------|
| Total polyphenols                                 | <b>230</b> | <b>322</b> |
| 1 - Tyrosol (p, HPEA)                             | 5          | 15         |
| 2 - Hydroxytyrosol (3,4 DHPEA)                    | 6          | 18         |
| 3 - Decarboxy oleuropein aglycone (3,4 DHPEH-EDA) | 45         | 59         |
| 4 - Decarboxy ligstroside aglycone (p, HPEA-EDA)  | 67         | 68         |
| 5 - Oleuropein aglycone (3,4 DHPEA-EA)            | 75         | 107        |
| 6 - Ligstroside aglycone (p, HPEA-EA)             | 22         | 43         |
| 7 - Lignans                                       | 10         | 12         |
|   |            |            |
| <b>Total polyphenols (1+2+3+4+5+6+7)</b>          | <b>220</b> | <b>310</b> |

The analytical data presented in the experimental section of the present patent application show the following:

(i) The addition to the extra-virgin oil of an olive previously treated and stabilized with ionizing radiations does not alter the organoleptic characteristics compared to the same extra-virgin olive oil as such (AS), on the contrary, the peculiarities of the product are significantly strengthened.

(ii) After 1 year, the addition of olives treated according to the present invention contributes to a better preservation of the oil (better analytical and organoleptic characteristics) compared to the oil as such and compared to an oil treated according to the prior art.

(iii) The analysis of polyphenols shows that the olive treated with the method of the present invention and added to the bottled extra-virgin olive oil causes a significant increase in the polyphenol content compared to the control sample.

(iv) The HPLC analysis shows that there is a significant release of phenols whereby the health benefit can be claimed.

The results also show that, by using as starting material an oil characterized by a polyphenol content lower than that is necessary to claim the health benefit, 2 months after the addition of an olive rich in polyphenols and treated with the process of the present invention, there is  
5 an increase in the polyphenol content in the oil that is sufficient for the recognition of the health benefit.

We can therefore conclude that the process according to the present invention provides extremely advantageous characteristics to the edible oil, in particular olive oil, more in  
10 particular extra-virgin olive oil, mainly a higher content in polyphenols which increase the beneficial bio-nutritional and health effects thereof.

Where any or all of the terms "comprise", "comprises", "comprised" or "comprising" are used in this specification (including the claims) they are to be interpreted as specifying the  
15 presence of the stated features, integers, steps or components, but not precluding the presence of one or more other features, integers, steps or components.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of preparing an edible oil product, comprising the following steps:
  - providing a given volume of edible oil;
- 5 - inserting a predetermined number of whole olives into the above-mentioned volume of edible oil, the whole olives having a polyphenolic content ranging from 1 to 5 % of polyphenols on the total weight of the olives, wherein the whole olives, before being introduced into the edible oil, are subjected to irradiation with ionizing radiations at an absorbed dose comprised within the range of from 2.5 to 15 kgray.
- 10 2. The method according to claim 1, wherein the absorbed dose is comprised within the range of from 2.5 to less than 5 kgray.
3. The method according to claim 1 or 2, wherein the edible oil product is extra-virgin  
15 olive oil.
4. The method according to any one of claims 1 to 3, wherein the said predetermined number of olives is comprised between 1 and 4 per litre of oil.
- 20 5. The method according to any one of claims 1 to 4, wherein said olives are green olives before the onset of ripening.
6. The method according to any one of claims 1 to 5, wherein said olives belong to the  
25 Coratina cultivar.
7. The method according to any one of claims 1 to 6, wherein the caliber of the olives ranges from 20 to 22, expressed as the number of olives per 100 grams.