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# INNOVATIVE RAW-VEGAN CHIA DESSERT- TOTAL POLYPHENOLS, ASCORBIC ACID AND ANTIOXIDANT ACTIVITY ANALYSIS

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**Abstract**: *The aim of this research work was to obtain two innovative assortments of raw vegan chia pudding and to analyze their antioxidant activity (CUPRAC method), their total polyphenols (Folin-Ciocalteu assay) and vitamin C content (iodometric method), compared to raw materials. The two varieties of chia pudding had as a common base chia seeds, vegan coconut milk, and honey. One of the assortments (P1) had as additions dried goji berries, candied cranberries and carob powder, and the second (P2): coconut flakes, brown raisins, almonds, cashews and hazelnuts. Regarding the raw materials used, the highest content of total polyphenols and vitamin C was found in dried goji berries (28.27 ± 1.88 mg gallic acid/g, respectively 490.23 ± 5.21 mg ascorbic acid/100g): they also showed the strongest antioxidant activity (235.82±4.08 mg Trolox/g). For the finished products, the highest content of total polyphenols and vitamin C was recorded in the P1 assortment of chia pudding (8.24±0.82 mg gallic acid/g, respectively 52.16±2.24 mg ascorbic acid/100g) which also showed the best antioxidant activity (69.52±2.08 mg Trolox/g), more than twice as large as the P2 assortment (32.41±1.82 mg Trolox/g).*

## • Results and discussions

• Table 1. –Ascorbic acid content in raw materials and in the chia puddings

| Sample | Ascorbic acid content (mg/100g) |
|---|---|
| P1 Puding | 52.16±2.24 |
| P2 Puding | 22.25±1.78 |
| Chia seeds | 1.71±0.12 |
| Brown raisins | 9.72±0.88 |
| Dried goji | 490.23±5.21 |
| Candied cranberries | 90.35±4.27 |
| Carob powder | 0.41±0.08 |
| Acacia honey | 48.30±2.41 |
| Coconut milk | 7.85±0.76 |
| Coconut flakes | 1.48±0.08 |

Table 2. –Total polyphenols content in raw materials and in the chia puddings

| Sample | Total polyphenols content (mg gallic acid /g) |
|---|---|
| P1 Puding | 8.24±0.82 |
| P2 Puding | 4.11±0.44 |
| Chia seeds | 2.32±0.18 |
| Brown raisins | 6.73±0.52 |
| Dried goji | 28.27±1.88 |
| Candied cranberries | 9.59±0.63 |
| Carob powder | 18.02±1.04 |
| Acacia honey | 0.68±0.08 |
| Coconut milk | 1.92±0.15 |
| Coconut flakes | 2.85±0.14 |
| Mix of hazelnuts, cashews, almonds | 3.25±0.21 |

Table 3. –Antioxidant activity of raw materials and of the chia puddings

| Sample | Antioxidant activity (mg Trolox/g) |
|---|---|
| P1 Puding | 69.52±2.08 |
| P2 Puding | 32.41±1.82 |
| Chia seeds | 35.87±1.27 |
| Brown raisins | 21.36±0.90 |
| Dried goji | 122.28±2.57 |
| Candied cranberries | 235.82±4.08 |
| Carob powder | 77.07±2.33 |
| Acacia honey | 70.02±1.84 |
| Coconut milk | 7.92±0.48 |
| Coconut flakes | 10.85±0.65 |
| Mix of hazelnuts, cashews, almonds | 14.86±0.41 |

| **Chia pudding P1** | **Chia pudding P2** |
|---|---|
| **Proximate composition**<br>Proteins: 4,8 g<br>Lipids: 11g<br>Carbohidrates: 43 g<br>**Energy value: 290.2 kcal** | **Proximate composition**<br>Proteins : 9,3 g<br>Lipids: 30 g<br>Carbohidrates: 22 g<br>**Energy value: 395.2 kcal** |

## • Conclusions

- 1. An innovative raw-vegan product was obtained: chia pudding in two variants: one with the addition of coconut milk, honey, dried goji, candied cranberries, carob powder (P1) and the second with the addition of coconut milk, honey, brown raisins, hazelnut mix, cashews, almonds, coconut flakes, vanilla essence (P2).
- 2. Both finished products had a very high content of vitamin C, but the P1 assortment had the concentration of ascorbic acid more than twice higher than the P2 assortment. In the case of the raw materials used, the highest content of vitamin C is in dried goji berries, followed by candied cranberries.
- 3. In the case of chia pudding P1 the total polyphenol content was the highest, almost twice as high as in the case of pudding P2.
- 4. Chia pudding P1 had more than twice the antioxidant activity of chia pudding P2.
- 5. Regarding the nutritional and energy values, it is noted that the first assortment of chia pudding P1 is 105 kcal lower in calories than the second assortment (P2). In P1 we have an amount of carbohydrates almost twice as high as in P2, but less protein and lipids than in P2