MINERAL AND VITAMIN COMPOSITIONS CONTENTS IN WATERMELON PEEL (RIND)

[1]Khojiyeva Guzal Uktamovna, [2]Navruzov Asilbek Abdusalomovich, [3]Raimkulova Sevinch Bahadirovna

[1]Assistant of the Department of "Agricultural and food technology" of Jizzakh Polytechnic Institute., [3]Student of Jizzakh Polytechnic Institute,

https://doi.org/10.5281/zenodo.14177323

Abstract. *Watermelon (family Cucurbitaceae and species Citrullus lanatus) is a major fruit widely distributed in the tropics and sub tropic regions (Yamaguchi, 2006). It is one of the most important vegetable crops and has large, round, oval or oblong fruit shape, the skin is smooth, with dark green rind or sometimes pale green stripes that turn yellowish green when ripe with very rich source of vitamins (Vitamin A 590 IU, Niacin 0.2 mg/100g and Vit. C 0.7-7.0 mg/100 g), and also serves as a good source of phyto-chemicals (Perkins-Veazie and Collins, 2004). It can be used for breakfast as appetizer or snack (Salk et al., 2008), and (Citrulus lanatus) is a popular thirstquencher during hot summer weather, it has source of carotenoid and lycopene, Lycopene has been found to be protective against a growing list of cancer (Cho, et al., 2004), and is delectable, thirst-quencher which helps quench the inflammable that contributes to conditions like diabetes, atherosclerosis, arthritis, asthma, and colon cancer (Jian et al., 2007). Cucurbit seeds are source of food particularly protein and oil (Hassan et al., 2008).*

Keywords: *watermelon, wastes, mineral, vitamin, rind, dietary use.*

Materials and Methods

Collection and preparation of samples: Watermelon fruits were bought from market. The watermelon was thoroughly washed to remove sand particles after which it was sliced using a home choice knife. The pulp was carefully scraped off to obtain the rind which was chopped into pieces with a chipping machine. The rind chips were weighed. The rind (wet weight = 200 g) and sundried to obtain the corresponding dry weight for the rind (100 g). Chemicals and reagents: All chemicals used, including those used in the preparation of reagents, were of analytical grade and products of reputable companies.

Determination of the vitamin, mineral and amino acid compositions

Vitamin A, B1 (thiamine), B2, B3 (niacin) and B6 were variously determined by the spectrophotometric methods reported by Onwuka (2005) whereas; vitamin C (ascorbic acid) was determined by the method described by Okwu and Josiah (2006). Mineral content viz: phosphorous, iron, zinc, manganese, copper, potassium, sodium, calcium and magnesium were determined by the spectrophotometric method described by James (1995), using Jenway Digital Spectrophotometer, Model 6320D, manufactured by Jenway Equipment Company, France. Potassium and sodium were determined by the flame photometric method, using Jaway Digital Flame Photometer.

Results and Discussion

Generally, Minerals and vitamins are essential, but in small amounts, for the regulation of normal metabolism and as an antioxidant (Barminas et al., 1998), the ability of watermelon rind powder and synthetic antioxidants (BHA) to prevent the bleaching of b-carotene (Keyvan et al., (2007), and the watermelon rind and seed flours study were composed of the various minerals determined, concurring with that reported by Hafiza et al., 2002, the mineral composition (mg/100

g) in the peel, Iron 1.29, manganese 1.42, phosphorous 135.24, calcium 29.15, sodium 12.65, copper 0.45, zinc 1.29, magnesium 1.48, potassium 1.37 are showed in table-1 and as shown in Table 2, composition of vitamin composition in mg/100 g, retinol (vitamin A) -52.13, Thiamine (vitamin B1)1.23, Riboflavin (vitamin B2) 2.71, Niacin (vitamin B3) - 4.25, Pyridoxine (vitamin B6)- 5.34, Ascorbic acid (vitamin C) -8.46, Similar higher nutrient composition in the seed than in the rind was reported in a similar studies by Koocheki et al., 2007 and Egbuonu, 2015), In the present study, mineral contents for human diet and some important physical properties such as design of equipments for sowing, processing, transportation, sorting, separation and packaging of watermelon is very important (Mustafa et al., 2010).

Table.1 Some mineral composition of water melon peel

S.No	Mineral	Rind mg/100g
1	Iron	1.29
2	Manganese	1.42
3	Phosphorous	135.24
4	Calcium	29.15
5	sodium	12.65
6	Copper	0.45
7	Zinc	1.29
8	magnesium	1.48
9	Potassium	1.37

Table.2 Vitamins composition in water melon peel

S.No	Vitamins	Rind mg/100g
1	Retinol (vitamin A)	52.13
2	Thiamine (vitamin B1)	1.23
3	Riboflavin (vitamin B2)	2.71
4	Niacin (vitamin B3)	4.25
5	Pyridoxine (vitamin B6)	5.34
6	Ascorbic acid (vitamin C)	8.46

Fig.1 Graphical representation of mineral composition in watermelon peel

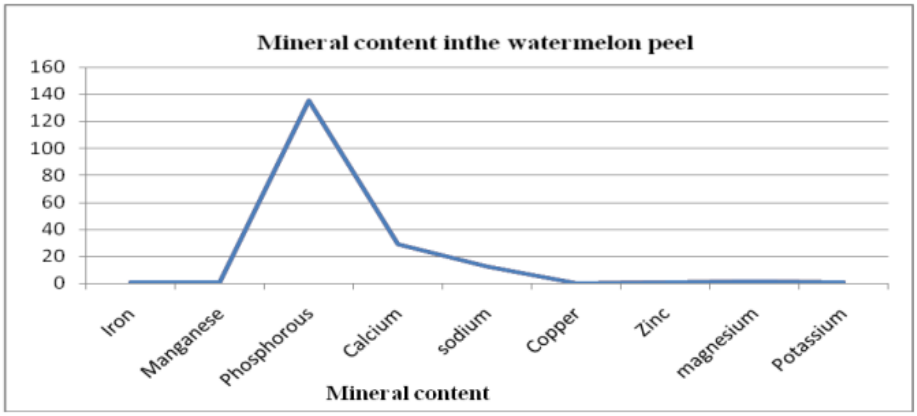
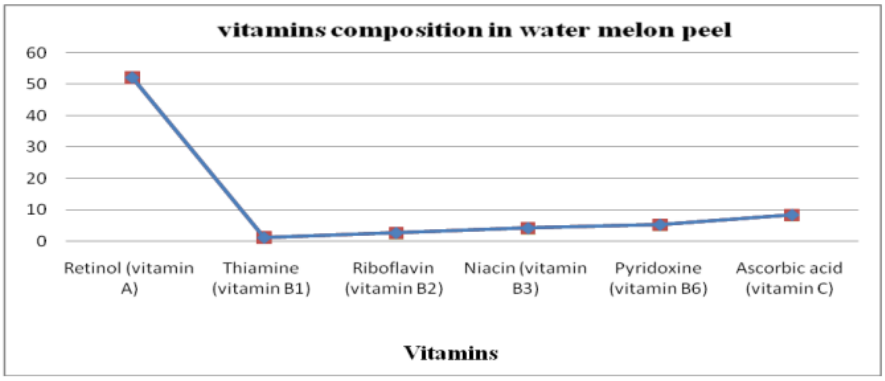


Fig.2 Graphical representation of vitamin composition in water melon peel



Minerals in adequate amount ensure the normal physiological functions, including iron utilization (Adeyeye, 2000), in the graphical representation phosphorous is very high content and followed Calcium and sodium table-1, and the vitamin A is very high, and the abundance of these minerals and vitamins in the sample is nutritionally and physiologically noteworthy Table 1: Some mineral composition of watermelon (Citrullus lanatus) rind and seed flours Rind Seed Difference Minerals .

The result shows that the peel (rind) is a better source for the minerals and vitamins Phosphorous, Calcium, vitamin A and vitamin C are reported that waste material have had valuable contents it may be of nutritional and physiological importance. Further studies, aimed at exploiting the finding of this study to increase the dietary use of these fruit wastes thereby use to various purposes by making as powder and decrease the solid waste in the environment.

REFERENCES

1. Adeyeye, E.I., 2000. Bio-concentration of macro and trace minerals in four prawns living in Lagos Lagoon. Pak. J. Scient. Ind. Res., Vol-43, pp- 367-373.
2. 2. Barminas, J.T., M. Charles and D. Emmanuel, 1998. Mineral composition of nonconventional leafy vegetables. Plant Foods Hum. Nutr., Vol- 53, pp-29-36.
3. E. Cho, J.M. Seddon, B. Roser, E.C. Willet and S.E. Hankinson, (2004), Prospective study of intake of fruits, vegetables, vitamins and carotenoids and risk of age, Maculopathy, 6, pp-883-892

4. Egbuonu, A.C.C., 2015. Assessment of some antinutrient properties of the watermelon (Citrullus lanatus) rind and seed. Research Journal of Environ. Sci., Vol-9, pp- 225-232.
5. Fila, W.A., Ifam, E.H, Johnson, J.T, Odey, M.O., Effiong, E.E., Dasofunjo, K., and Ambo, E.E (2013). Comparative proximate compositions of watermelon Citrullus Lanatus, Squash cucurbita pepol and Rambutan, Nephelium Lappaceun. International Journal of Science and Technology, Vol-2(1), pp81-88.
6. Hafiza, M.A., B. Parveen, R. Ahmad and K. Hamid, 2002. Phytochemical and antifungal screening of Medicago sativa and Zinnia elegans. Online J. Biol. Sci., Vol-2, pp- 130-132.
7. Hanan M.A. Al-Sayed, Abdelrahman R. Ahmed, (2013), Utilization of watermelon rinds and sharlyn melon peels as a natural source of dietary fiber and antioxidants in cake, Elsevier, Annals of Agricultural Science,vol58(1), pp-83–95.
8. James, C.S., 1995. Analytical Chemistry of Foods. 1st Edn., Chapman and Hall, New York, ISBN: 978-1-4613-5905-0, Pages: 178.
9. Mustafa Paksoy, Cevat Aydin, Önder Türkmen and Musa Seymen, (2010), Modeling of Some Physical Properties of Watermelon (Citrullus Lanatus (Thunb.) Mansf.) Seeds Depending on Moisture Contents and Mineral Compositions, Pak. J. Bot., Vol42(4),pp- 2775-2783.
10. Onwuka, G.I., 2005. Food Analysis and Instrumentation: Theory and Practice. Naphthali Print, Lagos, Nigeria.
11. L.G. Hassan, N.A. Sanni, S.M. Dangoggo, M.J. Ladan, (2008), Nutritional value of bottle gourd (Lagenaria siceraria) seeds. Global J. Pure & Applied Sci., Vol.4 No. 3, pp- 301-306