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Assessment of Nutrient composition of pesticides on selected fruits and vegetables in Rewa district

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Abstract
The aim of present study was to Assessment of Nutrient composition of pesticides on selected fruits and vegetables in Rewa district. The samples in the present study which comprised of sweet lime, tomato and bitter gourd were collected exclusively from Rewa district of M.P. The collected samples were analysed for nutrient composition which included moisture, beta carotene, vitamin C and reducing sugars, which are the main nutrients present in fruits and vegetables. A total of 30 samples of three fruits and vegetables viz. sweet lime, tomato and bitter gourd collected different locations of Baikunthpur, Nebuha, Hardi, Palhan and Tilkhan villages of Rewa district of Madhya Pradesh.

Keywords: assessment, nutrient composition, pesticides, fruits, vegetables

1. Introduction
Pesticides are chemicals that are used to kill insects, weeds, and other organisms to protect humans, crops, and livestock. There are benefits of the use of pesticides. Food crops are protected from pathogens, competition from weeds, and defoliation by insects and parasitism by nematodes by the usage pesticides, weedicides, insecticides etc., spoilage of harvested, stored foods, is also prevented and food production is increased.

The continuous use of agriculture land for growing different types of crops has led to reduction in fertility of the soil and soil requires some additional nutrients and agro-chemical products for growing of healthy food crops. Moreover agro-chemical products such as insecticides and herbicides are also used for crop protection from harmful insects and germs. With the growing population, the demand for food crops is also increasing and for efficiently meeting the demand the farmers have to constantly take the help of agro-chemical products. Agro-chemical products are a boon to the farmers, as, with the use of these products farmers can increase the agricultural productivity that efficiently help to provide food for the ever growing population and also contribute towards eradicating poverty.

Agro-chemical products provide an effective means towards meeting the challenge of more quantity of food to fulfill the food requirement of growing population. It is a fact that food crops have to compete with various species of weeds, insects and nematodes that destroy about 20 to 40 per cent of food crops every year. (Anonymous, 2009) [1]. However, out of all inputs, pesticides play key role in increasing agriculture production by controlling agriculture pests and diseases. It has been observed that about one third of reliable global output is estimated to be lost due to insect pests, diseases and weeds. In India, the value of crop loss due to pest was estimated at Rs.6, 000 crores in 1983 (Atwal, 1986) [2], which further increased to Rs. 29,000 crores in early 1990's (Dhaliwal and Arora1996) [3].

2. Material and Methods
Samples were collected from Rewa district of Madhya Pradesh. Proximate nutrient composition was analysed at Govt. T.R.S. College, Rewa and Research Centre and pesticide residues were analyzed in Quality Control Laboratory, JNKVV University, Jabalpur, Madhya Pradesh.

Information on pesticide usage practices of farmers on vegetables of Rewa district of M.P. was collected from 30 farmers in villages namely Baikunthpur, Nebuha, Hardi, Palhan and Tilkhan.

The selected samples tomato, guava and bitter gourd were procured from the farmers interviewed. The samples were obtained after proper sampling was done using standard sampling techniques.

3. Results and Discussion
The results obtained from the present investigation are presented in Tables 1.

Table 1: Nutrient composition of selected fruits and vegetables

Sample	Moisture (g %)	Vitamin C (mg/100gm)	Reducing Sugars (%)	Carotene µg/100g sample	
				Total carotenes	β-carotene
Sweet lime	86.2 ±1.04	39.01 ±0.42	4.43 ±0.10	4326.8 ±30.55	388.37 ±2.80
Tomato	95.3 ±1.75	28.33 ±0.39	4.82 ±0.11	5421 ±66.58	570.53 ±4.21
Bitter gourd	88.6 ±0.79	42.04 ±0.84	Negligible	8539 ±40	832.66 ±3.9

Moisture

The moisture content of the selected fruits and vegetables (sweet lime, tomato, bitter gourd) was analyzed using standard AOAC (1990)[4] methods. The results of analysis of the selected fruits and vegetable is tabulated in table 1.

Fruits and vegetables contain large quantities of water in proportion to their weight. When these foods are eaten, the water can be absorbed by the body**.**

The moisture content of sweet lime, tomato and bitter gourd was 86.2g%**,** 95.3g% and 88.6g% respectively. These values were comparable with the values given by Gopalan *et al*., (2004) [5] NIN to an extent of 88.4g% for sweet lime, 94g% for tomato and 92.4g% for bitter gourd.

Similar results were found by various other researchers. Water content of tomatoes reported by Sandra Bastin (1994) [6] was 94% and 93.1g% by Bose *et al.* (2002). The water content of tomatoes as a standard is around 93-95%.

Thus the moisture content of the vegetables in this study ranged from 87-95% and was similar to the results of other research studies. Fruits and vegetables have high water content which makes them low in density of other nutrients.

Vitamin C

The Vitamin C content of selected fruits and vegetables was analyzed by Methods of vitamin assay, (1966) [7]. The result is given in Table 1.

The Vitamin C content of Sweet lime, Tomato and bitter gourd was 39.01mg**,** 28.33 and mg 42.04mg respectively.

Similar results were reported by Bose *et al.,* (2002) [8] with vitamin C content of tomato as 31mg/100g.

These values were compared with the values given by NIN (Gopalan *et al*., 2004) [5]. As per their analysis sweet lime (without peel) contains 50mg/100gm, Tomato 27mg/100gm and Bitter gourd 88mg/100gm respectively.

Reducing sugars

The reducing sugars content of selected fruits and vegetables was analyzed by AOAC (1965) [9] method. The result is given in Table 1.

The reducing sugars content of each 100g sample of Sweet lime was 4.43%, tomato 4.82% and bitter gourd contains negligible amount of reducing sugars.

Sigala *et al.* (1994) [10] collected tomato samples at several different sites in Mexico, according to them Total reducing sugar content ranged from 1523.3 to 2493.3 mg in 100 g fresh weight.

Carotenes

The carotenes content of selected fruits and vegetables was analyzed by Modified method of Zakaria *et al.* (1979) [11]. The result is given in Table 1.

Total carotenes

The total carotenes content of Sweet lime, tomato and bitter gourd was 4326.8µg, 5421µg 8539µg per 100 gm of sample.

B-carotene

The β- carotenes content of of Sweet lime was 388.37µg tomato 570.53 µg and bitter gourd 832.66 µg per 100 gm of sample.

Tomato values were compared with the values given by NIN. Total carotenes and beta carotene values are 3010 µg/100g and 590 µg/100g. as reported by Gopalan *et al*., (2004) [5] respectively.

Dey *et al.,* (2005/2006) [12] reported that The total carotenoid content in bitter gourd ranged from 0.205 to 3.2 mg/100 g fresh weight 1.6 mg/100 g fresh weight, on average).

4. Conclusion

Nutrient compositions of selected fruits and vegetables were analysed. The nutrients moisture, vitamin C, reducing sugars, beta carotenes were estimated. The moisture content of Sweet lime, Tomato and bitter gourd was 68.2g%**,** 95.3g% and 88.6g%. The Vitamin C content of Sweet lime, Tomato and bitter gourd was 39.01mg**,** 28.33mg 42.04mg. The reducing sugars content sample of Sweet lime was 4.43%, tomato 4.82% and bitter gourd contains negligible amount of reducing sugars. The total carotenes content of Sweet lime, tomato and bitter gourd was 4326.8µg, 5421µg 8539µg. The β-carotenes content of of Sweet lime was 388.37µg tomato 570.53µg and bitter gourd 832.66µg.

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6. References

1. Anonymous. Agrochemical: Ensuring Crop Protection and Boosting Crop Production, 2009.
2. Atwal SS. Future of pesticides in plant protection in G. S. Venkataraman plant protection in the year 2000 AD. Indian National Science Acadamy. New Delhi, 1986.
3. Dhaliwal GS, Arora R. Principle of insect pest management. Common Wealth Publishers, New Delhi, 1996.
4. AOAC. Officials method of analysis. Association of official analytical chemists.14th ed. Washington D.C, 1990.
5. Gopalan C, Sastri R, Balasubramanian SC, Rao BSN, Deosthale YG, Pant KC. Nutritive Value of Indian Foods. National Institute of Nutrition. Indian Council of Medical Research. Hyderabad, 2004, 44-46.
6. Sandra Bastin. Foods and Nutrition Specialist and Kim Henken, Extension Associate for ENRI. Information taken from Bowes & Church's Food Values, 1994.
7. Methods of vitamin assay. The association of vitamin chemists. inter science publishers. 3rd ed New York, 287, 1966.
8. Bose TK, Kabir J, Maithy TK, Parthasarathy VA, Som MG. Vegetable crops, New Sarada Press, Culcatta, 2002, 02.
9. AOAC. Official's method of analysis. Association of official analytical chemists. Washington D.C, 1965.
10. Sigala MT, Ramirez BCE, Pena Lomeli A. Determination of simple sugars and acidity in accessions of husk tomato

(Physalis ixocarpa Brot.). [Spanish]. Revista Chapingo. Serie Horticultura. 1994; 1(2):141-143.
11. Modified method of Zakaria M, Simpson K, Brown PR, Kostulovic A. Use of reversed phase HPLC analysis for the determination of provitamin A carotene in tomatoes. Journel of chromatography. 1979; 176:109.
12. Dey S, Behera TK, Charanjeet Kaur. Genetic variability in ascorbic acid and carotenoids content in Indian bitter gourd. (*Momordica charantia* L.) Cucurbit Genetics Cooperative. 2005/2006; 28/29:91-93.