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RESEARCH ARTICLE

NUTRITIONAL VALUE OF VEGETABLE SAUCES AND ITS UTILIZATION IN RECIPE

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ABSTRACT

Vegetables are considered essential for well-balanced diets since they supply vitamins, minerals, dietary fiber, and phytochemicals. Each vegetable group contains a unique combination and amount of these phytonutrienticals, which distinguishes them from other groups and vegetables which in their own group. In the daily diet vegetables have been strongly associated with improvement of gastrointestinal health, good vision, and reduced risk of heart disease, stroke, chronic diseases such as diabetes, and some forms of cancer. Some phytochemicals of vegetables are strong antioxidants and are thought to reduce the risk of chronic disease by protecting against free radical damage, by modifying metabolic activation and detoxification of carcinogens, or even by influencing processes that alter the course of tumor cells. All the vegetables may offer protection to humans against chronic diseases. Nutrition is both a quantity and a quality issue, and vegetables in all their many forms ensure an adequate intake of most vitamins and nutrients, dietary fibers, and phytochemicals which can bring a much-needed measure of balance back to diets contributing to solve many of these nutrition problems. The promotion of healthy vegetable products has coincided with a surging consumer interested in the healthy functionality of food. Because each vegetable contains a unique combination of phytonutrienticals, a great diversity of vegetables should be eaten to ensure that individual's diet includes a combination of phytonutrienticals and to get all the health benefits. This article makes a review and discusses the nutritional quality and health benefits of the major groups of vegetables. More interdisciplinary work is required that involves nutritional and food scientists as well as others from biomedical fields to ascertain the true function of specific phytonutrienticals.

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INTRODUCTION

Sauce is liquid, cream, or semi- solid food served on or used in preparing other foods. Sauces are not normally consumed by themselves, they add flavor, moisture, and visual appeal to another dish. Sauce is a French word taken from the Latin Salsa, meaning Salted. The function of sauce is to add flavor that will compliment the flavor and texture of dish. It is important that any sauce, to or cold is prepared and seasoned thoughtfully so as to enhance the natural flavors of a dish. Sauce is usually thick liquid that is poured over other food in order to add moisture and flavor. A Sauce is a seasoned liquid used as an ingredient and dishes, and as a condiment. As a condiment, it may be applied just before serving, or set at the table for a dinner to apply him or herself. Sauces can be savoury, sweet, sour, or sweet and sour. Carrot is a root vegetable, usually orange in colour, though purple, black, red, white and yellow in colour. Carrots are domesticated form of the wild carrot, *Daucus carota*, native to Europe and Southwestern Asia. The roots contain high quantities of alpha- and beta- carotene, and are a good source of vitamin K and

vitamin B6, but the belief that eating carrots improves night vision. Carrots can be stored for several months in the refrigerator or over winter in a moist, cool place. For long term storage, unwashed carrots can be placed in a bucket between layers of sand, a 50/50 mix of sand and wood shavings, or in soil. A temperature range of 32 to 40 °F is best. Carrots contain water content around 86-95%, and the edible portion consists of around 10% carbohydrates. Carrots contain very little amount of fat and protein. One medium, raw carrot (61 grams) contains 25 calories, with only 4 grams of digestible carbs.

Beetroot (sometimes called table beet, garden beet, red or golden beet, or just beet) is a taproot part of the beet plant. It is used for nourishment, but it also has use in food coloring and medicine. It can be used anywhere between raw to heavily process. Ancient Greeks cultivated beetroot around 300 BC. Beets or beetroots, as they are often called, belong to the *Chenopodiaceous* family. Their history stretches back to ancient times, and the earliest signs of their cultivation was approximately 4,000 years ago in the Mediterranean region. From there, they were probably transported to Babylon, and by the 9th century AD, they had made their way into Chinese culture and cuisine. They have long been associated with

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sexuality and have been used as an aphrodisiac for thousands of years. Beetroot is frequently added as an ingredient to salads, soups and pickles and is also used as a natural coloring agent. Even though beets are available throughout the year, they are still considered seasonal vegetables. Besides their use as an actual food item, beets are valuable as a source of sucrose, which makes them a viable replacement for tropical sugar cane. They are still frequently used to make refined sugar.

Radish was a well-established crop in Hellenistic and Roman times, which leads to the assumption that it was brought into cultivation at an earlier time, Zohary and Hopf note that "there are almost no archeological records available" to help determine its earlier history and domestication. Radish, that are common part of salad, is a root crop, and it is pungent or sweet in taste with a lot of juice. Radishes can be white, red, purple or black, and in terms of shape, it can be long and cylindrical, or round. They are eaten raw, cooked or pickled. The oil obtained from the seeds of radish is also used in a number of products and beneficial health applications. It is a part of salad, and good for health. The parts of radishes that are commonly consumed are the leaves, flowers, pods and seeds. The scientific name of radish is *Raphanus sativus* which belongs to the *Brassicaceae* family. Radish is also known as Daikon in some parts of the world, primarily in Asian markets. Radishes are a very good source of vitamin C – 25% of the daily recommended value – helping to rebuild tissues and blood vessels, and keeping bones and teeth strong. Vitamin C fights disease and rescues the cells from an onslaught of destructive free radicals. This is done through electrolytes and natural antioxidant action of this one vitamin, increasing immunity of the body, and helping to fight against all kinds of diseases, including cancer, heart disease, and stroke. Folate, fiber, riboflavin, and potassium, as well as good amounts of copper, vitamin B6, magnesium, manganese, and calcium are less prominent nutrients that support the healthy properties of radishes.

Garlic (*Allium sativum*), a herb used widely as a flavoring in cooking, has also been used as a medicine throughout ancient and modern history to prevent and treat a wide range of conditions and diseases. Garlic belongs to the onion genus *Allium*, and is closely related to the onion, rakkyo, chive, leek, and shallot. It has been used by humans for thousands of years and was used in Ancient Egypt for both culinary purposes and its health and therapeutic benefits. Garlic ranks as an excellent source of manganese and vitamin B6, a very good source of vitamin C and copper, and a good source of selenium, phosphorus, vitamin B1, and calcium in our WH Foods rating system, it is the sulfur compounds in garlic that serve as its spotlight nutrients in terms of overall health benefits. The sulfur-containing compounds in this allium vegetable have been shown to provide us with health advantages in a wide variety of body systems, including: Cardiovascular system, Immune system, Inflammatory system, digestive system, endocrine system, and detoxification system. garlic's potential to reduce the risk of heart disease, cholesterol levels and cancer.

Mint Mint leaves is originated in Asia and the Mediterranean region, mint has been known for its many benefits throughout history. Greeks used to clean their banqueting tables with the herb an added it to their baths, Mint plants contain an

antioxidant and anti-inflammatory agent called rosmarinic acid which has been studied for its effectiveness in relieving seasonal allergy symptoms, revealing a promising natural treatment. Mint contains menthol, a natural aromatic decongestant that helps to break up phlegm and mucus, making it easier to expel. Menthol also has a cooling effect and can help relieve a sore throat, especially when combined with tea. Mint is a calming and soothing herb that has been used for thousands of years to aid with upset stomach or indigestion. Mint is thought to increase bile secretion and encourage bile flow, which helps to speed and ease digestion (and which may also support healthy cholesterol levels). Mint leaves help to protect the lining of the stomach from the negative effects of indomethacin and ethanol, giving it a potential role in preventing gastric ulcers associated with alcohol consumption and regular use of painkillers. Mint has the effect of calming and cooling skin affected by insect bites, rash or other reactions.

Coriander seems to have been cultivated in Greece since at least the second millennium BC. One of the from Pylos refers to the species as being cultivated for the manufacture of perfumes, it apparently was used in two forms: as a spice for its seeds and as a herb for the flavour of its leaves. This appears to be confirmed by archaeological evidence from the same period; the large quantities of the species retrieved from an Early Bronze Age layer at Sitagroi in Macedonia could point to cultivation of the species at that time. Coriander was brought to the British colonies in North America in 1670, and was one of the first spices cultivated by early settlers.

Objectives

- To identified vegetables and their Nutritional profile.
- To develop sauces by using selected vegetables.

Methodology

Study Area- The study was conducted in the research laboratory of the Department of Food Science and Technology, BBAU, Lucknow and in the analysis laboratory of RFRAC (Regional Food Research and Analysis Centre) situated in Lucknow.

Period of the study- The present study conducted during the period of 2016-2017 session in the whole work comprising period of July 2016-May 2017.

Sample size

Sample 1(T1) (Garlic, radish sauce)	Sample 2(T2) (Beetroot carrot sauce)	Sample 3(T3) (Mint, coriander sauce)
50 gm(Garlic) 150 gm(radish)	100gm(Beetroot) 100gm(carrot)	100gm(Mint),50gm(potato) 100gm (Coriander)

Where, T1= Garlic, radish sauce.
T2= Beetroot, carrot sauce.
T3= Mint, coriander sauce.

Collection of ingredients

Carrot, Beetroot, Radish, Garlic, Mint, Coriander, Potato where purchased from local market of Lucknow area. The vegetables were washed with clean water to remove dirt, sand and other undesirable materials before use.

Technique

The flow chart describe the technique used for the development of carrot beetroot sauce.

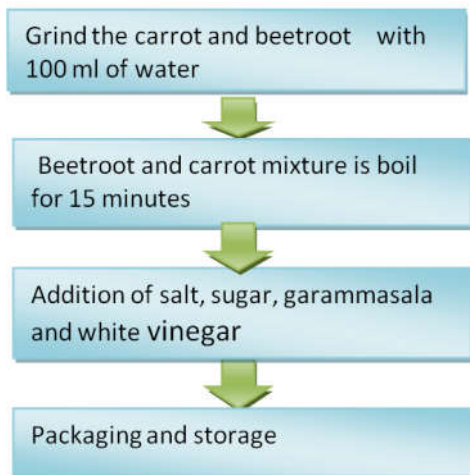


Fig.1. Flow chart for developing of carrot, beetroot sauce

The flow chart describe the technique used for the development of garlic radish sauce.

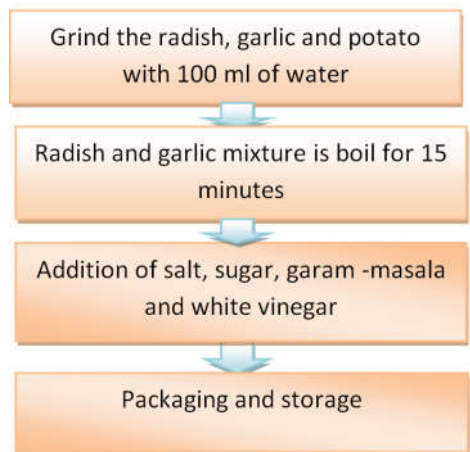


Fig.2. Flow chart for developing of radish, garlic sauce

The flow chart describe the technique used for the development of mint coriander sauce.

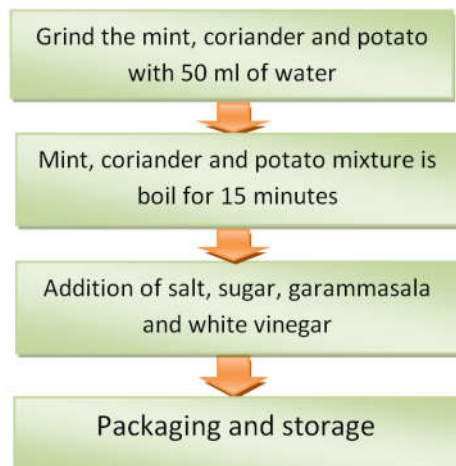


Fig. 3. Flow chart for developing of mint, coriander sauce

RESULTS

Table 1. Distribution of Carrot on the basis of Nutritional value

Nutritional Value	Carrot
	Amount (per 100 gm)
Riboflavin	0.058 mg
Thiamin	0.066 mg
Vitamin A	16706 IU
Vitamin C	5.9 mg
Vitamin K	13.2 mcg
Sodium	69 mg
Potassium	320 mg
Calcium	33 mg
Manganese	12 mg
Phosphorus	0.143 mg

Source: Nutrient data for this listing was provided by USDA SR-21

Table 2. Determination of Beetroot on the basis of nutritional value

Nutritional value	Beetroot
	Amount (per 100 gm)
Dietary Fiber	2.80 g
Folates	109 micro.gm
Niacin	0.334 mg
Pantothenic acid	0.155 mg
Pyridoxine	0.067 mg
Riboflavin	0.057 mg
Thiamin	0.031 mg
Vitamin A	33 IU
Vitamin C	4.9 mg
Vitamin E	0.04 mg
Vitamin K	0.2 micro.gm
Sodium	78 mg
Potassium	325 mg
Calcium	16 mg
Copper	0.075 mg
Iron	0.80 mg
Magnesium	23 mg
Manganese	0.329 mg

Source: Nutrient data for this listing was provided by USDA SR-21

Table 3. Distribution of Radish on the basis of Nutritional value

Nutritional Value	Radish
	Amount (per 100 gm)
Calcium	17 mg
Copper	0.1 mg
Iron	0.15 mg
Magnesium	9 mg
Phosphorus	24 mg
Potassium	285 mg
Vitamin C	15.1 mg
Vitamin B6	0.04 mg
Vitamin E	0 mg
Vitamin K	0.3 mcg
Riboflavin	0.02 mg

Source: Nutrient data for this listing was provided by USDA SR-21.

Table 4. Determination of Garlic on the basis of nutritional value

Nutritional value	Garlic
	Amount (per 100 gm)
Vitamin B6	1.235 mg
Folate	3 mcg
Vitamin C	31.2 mg
Calcium	181 mg
Iron	1.7 mg
Magnesium	25 mg
Manganese	1.672 mg
Phosphorus	153 mg
Potassium	401 mg
Sodium	17 mg
Zinc	1.16 mg
Selenium	14.2 mcg

Source: Nutrient data for this listing was provided by USDA SR-21

Table 5. Determination of Mint on the basis of nutritional value

Nutritional value	Mint
	Amount (per 100 gm)
Sodium	31mg
Potassium	569mg
Total carbs	15g
Dietary fiber	8g
Sugars	0g
Protein	4g
Vitamin A	84%
Vitamin C	52%
Calcium	24%
Iron	28%

Source: Nutrient data for this listing was provided by USDA SR-21

Table 6. Determination of Coriander on the basis of nutritional value

Nutritional value	Coriander
	Amount (per 100 gm)
Vitamin A	6748IU
Vitamin C	27mg
Vitamin E	2.50mg
Vitamin K	310mcg
Sodium	46mg
Potassium	521mg
Calcium	67mg
Iron	1.77mg

Source: Nutrient data for this listing was provided by USDA SR-21

Conclusion

The vitamins and minerals content is higher in vegetables per 100 g of the sample weight. Magnesium percentage of Carrot, beetroot sauce is 15.32 percent. The Calcium percentage of Garlic, radish sauce is 81.02 mg per 100 g. The Vitamin C content of Mint, coriander sauce is 6.14 mg per 100 g.

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