

VEGETABLES





Vegetables Processing Toolkits



VEGETABLES

1.- Composition of different vegetables

Proximate composition of different vegetables

Vegetable (100g)	Fiber (%)	Calories	Water (%)	Sódium (mg)	Potássium (mg)	Iron (mg)	Cálcium (mg)	A Vitamin (µg)	B Vitamin (µg)	B2 Vitamin (µg)	B5 Vitamin (µg)	C Vitamin (mg)
Onion	1,1	31,5	90,6	36,4	27,2	0,5	32	2	60	45	0,36	9,7
Garlic	2,1	134	69,5	62,9	607,6	1,04	38	0	224	74	0,29	14
Green pepper	1,8	29	92,8	28,2	153,7	0,4	12	200	20	30	0,2	126
Whole Broccoli	2,9	25	92,1	27	325	0,6	86	1500	80	200	0,75	80
Cooked carrot	1	43	91,2	25,0	119,5	0,6	26	900	35	40	0,35	9,5
Raw carrot	1,8	50	87,79	53,7	238,6	0,6	56	1100	60	50	0,6	26,8
Raw cauliflower	2,7	31	92,5	34,0	286,7	0,6	122	3	25	56	0,35	48
Cooked cauliflower	2,7	31	93	15,0	142	0,7	22	18,5	90	110	0,7	72
Green bean	1,8	25	92	34,3	126,1	1,16	55	125	215	200	0,54	23,3



°Onion

°Garlic

°Green pepper

°Carrots

°Broccolis

°Couli-flower

°Green bean



2.- Onion

The onion (*Allium Gender*), is one of the most cropped vegetables, probably proceeding from Central Asia.

The pungent odors and flavors are due to sulfur compounds being mostly n-propyl disulfide. Onion grows in all temperate climates.

Onions require cool temperatures during early growth as well as long days and high temperatures for bulb formation.

It is an annual plant for the production of bulbs, but biennial for the production of seeds. The bulb is tunicate, concentric and formed by the leaf sheaths that become fleshy and very succulent, by superposing to each other, and are externally covered by dry "scales" that exhibit yellow, purple or white coloration according to the variety.

The bulbs should be firm, showing dry peels as well as dry and healed "neck". It should avoid those bulbs that are sprouting or showing scars, mould and softened areas.

3.- Garlic

The garlic (*Allium sativum*) is a bulb vegetable, that is very protected against water.

It is formed by bulbils cloves that are individually or collectively protected by one dry-leaf tunic. The "noble" garlic cultivars have less than 20 teeth or bulbils and form a 6 cm -diameter bulb.

Common cultivars exhibit more than 20 teeth in each bulb. The garlic crop is well developed under cold climate, since it is resistant to low temperatures as well as to frost. The most serious defects of the garlic are the shrinkage, sprouting and rottenness.

The main pungent substance that composes the characteristic flavor of garlic is the diallyl disulfide that compose around 70% of the volatile compounds in this product.

4.- Green Pepper

This vegetable belongs to the Solanaceae family and is originated from southern Mexico and Central America.

The green pepper is a summer plant. Actually, it may also be produced in winter, by using the greenhouse cropping technique.

There are three basic types of green peppers, according to their shape: square, rectangular and conical.

According to coloration, the green pepper fruits are green when immature, but become red, yellow or orange when ripe, as depending on variety.

The purple and cream-colored green peppers form the exception of this pattern because they show this color since the beginning of their formation.

The green peppers should be clean, firm and provided with bright peel, which indicates they are fresh.

If precociously harvested, they are small and green-pale colored, besides wilting more quickly.

The green pepper is one of the C-vitamin richest vegetables, as well as an excellent A-vitamin source when it is ripe.

It is also a source of calcium, phosphorus and iron. It has low caloric value.

5.- Carrots

The carrot is an annual herbaceous vegetable from which the eatable product is a root that is tuberous, fleshy, flat, straight, and without ramifications.

The varieties are distinguished by the shape of the root (cylindrical or conical), internal coloration of the root (core), external coloration, foliage coloration and planting time.

The carrot cultivars or hybrids that are better adapted to processing are those showing more cylindrical roots, since they reduce the losses during processing.

This crop is sensible to the climatic conditions, as reaching a better yield under mild temperatures (16-20°C). However, some cultivars were developed for typical conditions in hotter regions, by adapting well to high temperatures and high pluviometric index.

Nevertheless, all cultivars are sensible to frosts. The roots should be firm, showing an intense orange color, without green or purple pigmentation on the upper part, and the length and diameter ranging from 15 to 20 cm and 3 to 4 cm, respectively.

The larger roots are lower quality because they are more fibrous and less flavored.

Carrot is a highly appreciated vegetable either for in-natura consumption or in its processed forms, besides being appropriate to be processed.

The carrot is a highly nutritional vegetable, probably one of the better sources of A vitamin.

It also supplies calcium, sodium and potassium.

6.- Broccolis

Broccoli is an annual, shrubby-sized inflorescence vegetable proceeding from the Mediterranean region, and it belongs to the Brassicaceae family.

The eatable part are the green-colored floral buds. It is a very resistant vegetable with annual cycle.

There are two broccoli varieties in the market: the branchy one that is the most traditional and the compact one or the one forming only one head.

This is the most suitable variety for freezing.

It should present a dark green-colored, firm and compact head with thin granulation and without wilting signs.

In northern countries, this vegetable is cropped over the spring season. In the countries with hotter climate, it is usually cropped in autumn and winter.

The broccoli is a low calorie vegetable, and advisable for weight loss regimes. It has high content of both A and C vitamins.

In addition, it is a source of iron, calcium and fibers.

7.- Couli-flower

The cauliflower is an inflorescence-type vegetable that belongs to the Brassicaceae family.

It proceeds from the Asia Minor and has annual cycle. The eatable part is an immature inflorescence with a thick, fleshy, tender and large matter, with white and creamy coloration, and showing the aspect of a flower (head).

The cauliflower cultivars have very specific thermoclimatic requirements and the planting time is extremely related to the adaptive characteristics of the cultivar to the climate of the place under consideration.

Although this vegetable shows to be appropriate to processing, the first stages should be manually accomplished.

Usually, some equipments are used after the separation of the flowerlets for the subsequent stages.

Because the cauliflower is a delicate vegetable, it requires some care and attention in its preparation.

It is also an important vegetable under the nutritional viewpoint, since it is a source of calcium, phosphorus, folate and C vitamin.

It has low caloric value.

8.- Green bean

The green bean is a vegetable proceeding from the Central America. It belongs to the Fabaceae family. It is a rich source of fibers, has appreciable amount of the vitamins B1 and B2, besides having lower amounts of phosphorus, fluorine, potassium, calcium, iron, vitamins A and C. There are many varieties of this vegetable. The variety "butter" (flattened) have a

clear green coloration and reach 21-23 cm length and 1.5-2.0 cm width. The variety "macaroni" (round) reach 15-17 cm length and average diameter of 1.0 cm.

The high-qualified green bean should be whole, fresh, tender and succulent, showing uniform green coloration and no wilting signs, wounds or dark points. The seeds should be very small.

The existence of protuberances in the green bean is an indicative the seeds are well formed and the product is too fibrous and less palatable, that is an indicative for low quality.

