

# Importance of Cauliflower (*Brassica oleracea* var. *botrytis*) Leaf and Its Application in Food Processing

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Since ancient times the greens are being big red for the people especially by the children. As we know Green leafy vegetables are the major source of iron, folate, and other essential nutrients (Hemmige natesh *et al.* 2017). But due to its unattractive appearance and taste it is not widely acceptable by the children. To overcome this, mothers try to mask the greens into the favorite food of the children to feed them the nutrients in greens and this process emerge and developed as the major food application as food incorporation technology. According to the data in India women between 15 to 49 years of age are anemic and 79% of children of age group between 6 to 35 months age are anemic and cauliflower leaves are rich source of natural antioxidants that have been shown to help prevent cancer (Krishnaswamy, 2009). Cauliflower leaf (*Brassica oleracea* var. *botrytis*) is good in nutrients and are rich source of iron, calcium, and beta carotene which can be used in value added items (Kowsalya and Sangheetha, 1999).

## Cauliflower leaf

The name cauliflower is gotten from the Latin word "caulis" for cabbage and blossom. Fresh cauliflower leaf is a seasonal, nutritious, calcium rich (626mg/100g of fresh leaf) tasty green leafy vegetable however it contains around 80% moisture which makes it unexceptionally short-lived (Gopalan *et al.* 2004).

<b>Kingdom</b>	Plantae
<b>Division</b>	Magnoliophyta
<b>Class</b>	Magnoliopsida
<b>Subclass</b>	Dilleniidae
<b>Order</b>	Capparales
<b>Family</b>	Brassicaceae
<b>Genus</b>	Brassica
<b>Species</b>	<i>B. oleracea</i> L. var. <i>botrytis</i>

## Chemical Composition

Cauliflower leaf is good in supplements and has higher waste index. Its leaf which are discarded as waste are additionally rich sources of iron and beta carotene which can be used in the value-added product (Kowsalya and Sangheetha, 1999).

There are Phenolic intensifies that apply to countless mixes confined from plants. Phenolic compound is ordered into basic fragrant ringed mixes to enormous and complex tannins and determined polyphenols (Guerrero – Beltran *et al.* 2012).

Cauliflower leaf contain a sulphur compound that has additionally been appeared to kill disease causing microorganisms, thereby preventing the tumour development. A few analysts think disposing of disease undifferentiated organisms might be critical to controlling cancer (Guerrero – Beltran *et al.* 2012).

## Nutrient content of cauliflower leaf (per 100g)

Nutrients	Per 100g
Protein	5.9g
Fat	1.3g
Carbohydrate	7.6g
Crude fibre	2g
Beta carotene	49.526mg
Iron	41mg
Energy	66 kcal

## Therapeutic significance of Cauliflower leaf

Among all the green leafy vegetables, Cauliflower greens (*Brassica oleracea* var. *botrytis*) was found to have the maximum amount of iron such as 40mg/100g. The mean haemoglobin level of the selected 20 subjects had increased from 12 to 12.5 g / dl after supplementation of 50g cauliflower greens poriyal for 90 days. The increase was statistically significant at five percent level. These results indicate more beneficial effect of cauliflower greens. (Kaviyaras *et al.* 2017)

Sulforaphane in cauliflower and other cruciferous vegetables has been found to fundamentally improve pulse and kidney capacities (Cohen et al. 2000; Knekt et al. 2002 and Zhang and Hamauza, 2004).

Adolescence is the transition period between childhood and adulthood. Adolescence is characterized by the growth spurt, a period in which growth is very fast. The hemoglobin level of the adolescence 11-14g/dl. The fresh cauliflower leaves contain 40 mg/100g of iron. Prevention of anemia in adolescents is important as they are the future mothers. Among the green leafy vegetable cauliflower greens (*Brassica oleracea* var. *botrytis*) which has a high amount of iron. Cauliflower leaves are rich in folate, vitamin C vitamin E and beta carotene and contain some important nutrients like indole -3-carbinol and phytonutrient sulforaphane (Kaviyarasi et al. 2017)

Cauliflower leaf contain sarcoma prevention agents and other bioactive compounds which has been indirectly connected with cardiovascular illnesses and constant sicknesses (Cohen et al. 2000; Knekt et al. 2002 and Zhang and Hamauza, 2004).

Responsive oxygen can cause lipid and protein oxidation, DNA harm and change of quality articulation in the body. They assume impotence job in etiopathology of numerous illnesses like stroke, respiratory failure, liver injury. Lop-sidedness among ROS and cell reinforcements reason of oxidative pressure might be brought about by cancer prevention agent imperfection in weight watcher expanded creation of free extremists by stress, smoking, natural defilement which move into food and water (Lee et al. 2004).

Cruciferous vegetables utilization come to bring down the danger for certain sorts of diseases, for example, renal malignant growth prostate malignancy and perhaps colorectal malignant growth (Thomson et al. 2010).

All bioactive properties introduced in these vegetables may control irritation for the explanation that they may work on various and corresponding

stages for example rouse detoxification proteins search free revolutionaries and produce safe capacities (Fimognari et al. 2012).

Isothiocyanates present in cauliflower vegetable, act as good chemo preventive exercises against various constant degenerative infections along with malignant growth cardiovascular illnesses, diabetes (Fimognari et al. 2012).

Brassica vegetables as amazing source of medical property's, just as valuable impact on human wellbeing. Numerous mixes have been disengaged from cauliflower vegetables and it assume significant part in human wellbeing. Cauliflower leaf great source of iron and different micronutrients. Various micronutrient lacks are regular insufficiency mostly in developing country. Generally, individuals in the developing nations likewise experience the ill effects of various types of these nourishing issues. As per this information in India ladies between 15 to 49 years old are sickly and 79% of offspring of between 6 to 35 months age are weak (Krishnaswamy, 2009).

A brassica oleracea leaf contains a few clinical properties. It contains folate which helps in making and moving the blood and forestalls symptoms of pallor (Brittenham, 2009 and Dreyfuss et al. 2000).

These plants-based phytochemicals can be utilized as significantly good source because of its digressing healthful, useful, cancer prevention agent and other remedial properties and adds wholesome security too. There is no big esteem given to the disposed of leaf of cauliflower which is additionally rich source of dietary fibre, minerals, beta carotene, iron and calcium. utilization of green leaf of cauliflower at family level become successive then it very well may be the solid advance/solutions for destroy against micronutrient insufficiencies particularly frailty that are predominant in each nation (Sadhna Singh et al. 2019).

### Value added products from Cauliflower leaf

Balaji S and Dr. M. Thamarai Selvi (2021) Formulation and Sensory Acceptability of Cauliflower Leaf Jellies which are highly acceptable by the peoples

as per the research and it is economically feasible product for the iron substitution.

Kaviyarasi and Abiramin (2017) formulated cauliflower greens poriyal supplementation on haemoglobin levels of anaemic adolescent girls and as a result the mean blood haemoglobin of the sample before supplementation was found to be 8.3mg/dl and mean blood haemoglobin of the sample after supplementation was found to be 12.9mg/dl.

Ambika chauhan and Intelli (2014) prepared hotcake, dhokla and idly which was enhanced with 2g and 5g dry cauliflower leaf powder per serving and sensory assessment was finished with the assistance of 9-point hedonic scale concerning appearance, taste, surface and flavour by 9 boards of semi trained panel members. Biochemical investigation of dry cauliflower leaf uncovered moisture 3.4 percent, protein 21.6 percent, fibre 10.23gm and iron 62mg (values according to 100gm). The research was concluded that at 2 g consolidation of dry cauliflower leaf powder the product was acceptable.

Towseef and Monika (2014) focused to use cauliflower leaf in value added item, consequently decreasing the wastage. The wheat flour was mixed with cauliflower leaf powder within the proportions of 10, 20 and 30 for half an hour for the advancement of bread rolls. The formulated bread rolls were placed undisturbed ninety days to find out shelf life qualities. the foremost elevated moistness, rough macromolecule, unrefined fibre and crude substance of one.68, 9.49, 13.32 and 1.49% were recorded in rolls organized from 70:30: wheat flour: cauliflower leaf powder, severally. As a result, 100:00: wheat flour: cauliflower leaf powder recorded most elevated estimation of rough fat (21.96%).

### Conclusion

Cauliflower leaf are one among the most valuable agricultural commodity that are thrown as the waste due to lack of knowledge among the population. Even now we can get these leaf for free from the market and most of them are now cattle feeds. There have been extensive research in the field

of cauliflower leaf but only few research on the application and incorporation of these leaf on the food industry for the incorporation. There may be controversy related to the pesticide used in the production but its is not true that these are loaded with pesticides than other fruit and vegetable products good agricultural practice, washing, blanching of Cauliflower leaf will reduce the pesticides if it is present. So a attention and extensive research should be done on this highly nutritious green leafy vegetable and at the home level incorporation by the parents may help in controlling iron deficiency anaemia.

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