



# Herbal Sauce incorporated with Indian gooseberry

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## Abstract

Development of ready to eat herbal sauce incorporated with Indian gooseberry with objectives to standardize the method of preparation, preservation and shelf life of the sauce is reported here. Mexican Mint, betel leaves and other ingredients were used to prepare this sauce. And sensory analysis was also carried out using the 5-point Hedonic Rating Scale. The herbal leaves are nutritive and contain anticarcinogens showing promise for fighting off disease. Likewise Mexican mint with a pungent oregano-like flavour and odour cures Respiratory Issues, Treats Fever, Reduces Stress and Anxiety, Improves Kidney Health etc. On the other hand, betel leaves are also powerful and benefits by curing Eases Constipation, Improves Digestion, Reduces respiratory etc. During the storage, transportation and glut season there are menacing wastage. Such wastage may be minimized by various ways such as making them as powder, sauce or ready to eat foods and then consuming. In other hand a sauce can be prepared and consumed. Sauce is defined as, a liquid or semi-liquid edible dressing which is served as an accompaniment to an ingredient. It is popular as it offers a refreshing taste to both ready to eat foods and meals, and is also believed to be nutritious (Ghosh et al, 2004). And is easy for handling and storage with longer shelf-life

**Keywords:** Mexican mint, betel leaves, turmeric, antimicrobial content, sauce

## Introduction

Herbs have been utilized in foods centuries. Adding herbs to food can greatly improve their flavour and add extra antioxidants that are more efficient for fighting off disease. The therapeutic benefit of herbal leaves has gained much attention now especially in Asian countries. A lot of herbal leaves nowadays served as a healthy snack food. Plants are the rich source of active metabolites that protects us against variety of microbial species. As we all know Herbs are been used since ancient time for their medicinal value, but mostly concentrated only on teas and tinctures. More recently, their healthful value is realized as a food ingredient has. But the important and true power of herbs is present in their wealth of protective polyphenols, potent antioxidant and also anti-inflammatory effects of plant compounds. Studies show that polyphenols in herbs help to cure diseases such as cancer heart disease diabetes and more. Although many of the studies on herbs shows that effects have involved only in the concentrated solutions of the leaves and active components, there is evidence that their benefits still apply when the herbs are cooked and eaten as part of a regular meal, too.

## Betel leaf

**Scientific name:** *Piper betle*

**Family:** Piperaceae

**Kingdom:** Plantae

**Order:** Piperales

Betel leaves are widely cultivated plant in the Indian subcontinent. The traditional Indian ayurvedic document quotes several medicinal properties including their effective antifungal agent. Betel leaves contain immense therapeutic potential, which is all detailed in the ancient traditional ayurvedic manuscripts. Betel leaf is an excellent benefit that offers instant relief from pain. Not only that they have many benefits such as curing Eases Constipation, Improves Digestion, also Reduces respiratory issues Antiseptic and anti-fungal properties

Maintains Oral Health Relieves Joint Pain etc. The Betel leaf comes from a perishable commodity and therefore, it is always subjected to wastage by quick spoilage due to dehydration, fungal infection, de-chlorophyllation etc. This may cause a postharvest loss ranging from 35% to 70% during transport and storage (Rao and Narasimham, 1977). Even if the most conservative estimate of 10% loss were considered that too would reveal a menacing loss of betel leaves worth about Rs 900 million every year to the country. Not only this factor but also, particularly in the rainy season a large portion of the leaves remain unsold or sold at a throw away price (Guha and Jain, 1997). In spite of the nutritive value, stimulating power and refreshing properties, excessive consumption of betel leaves like any other edible items may also prove to be harmful particularly to the teeth. Such harmful effects are exerted by the additional ingredients consumed along with the leaves for making the quid more palatable and attractive.



**Fig 1: Betel leaves**

S. No.	Constituents	Approximate composition
1	Water	85-90%
2	Protein	3-3.5%
3	Fat	0.4-1.0%
4	Minerals	2.3-3.3%
5	Fibre	2.3%
6	Chlorophyll	0.01-0.25%
7	Carbohydrate	0.5-6.10%
8	Nicotinic acid	0.63-0.89 mg/100g
9	Vitamin C	0.005-0.01%
10	Vitamin A	1.9-2.9 mg/100g
11	Thiamine	10-70 µg/100g
12	Riboflavin	1.9-30 µg/100g
13	Tannin	0.1-1.3%
14	Nitrogen	2.0-7.0%
15	Phosphorus	0.05-0.6%
16	Potassium	1.1-4.6%
17	Calcium	0.2-0.5%
18	Iron	0.005-0.007%
19	Iodine	3.4 µg/100g
20	Essential Oil	0.08 - 0.2%
21	Energy	44 kcal/100 g

**Table 1: Nutritional value of betel leaves**

## Mexican mint

**Scientific name:** Coleus amboinicus

**Family:** Lamiaceae

**Kingdom:** Plantae

**Order:** Lamiales

Mexican mint is a perennial herb grown in the tropical regions of Asia, Africa, and Australia. The therapeutic characteristics of this herb are broad and holds a significant characteristic of their own. It is mainly due to the presence of phytochemical compounds present in them. This plant has over a dozen of benefits and can cure

almost many diseases. Mexican mint has a strong smell, the aromatic nature of this plant makes it the best choice when it comes to preparing essential oils. This herb holds a great significance in folk medicines throughout the world in their unique characteristics. In the same way studies also suggested that Mexican mint also has more medical benefits Cures Respiratory Issues, Treats Fever, Reduces Stress and Anxiety, Improves Kidney Health, reduces arthritis, Improve vision.



Fig 2: Mexican mint

Nutrition Facts			
Serving Size: 1 (0.01 oz)			
Amount Per Serving			
Calories	0	Calories from Fat	0
		% Daily Value*	
Total Fat	0g		0%
Saturated Fat	0g		0%
Trans Fat			
Cholesterol	0mg		0%
Sodium	0mg		0%
Total Carbohydrate	0g		0%
Dietary Fiber	0g		0%
Sugars	0g		
Protein	0g		0%
Calcium			
* Percent Daily Values are based on a 2,000 Calorie diet. Your daily values may be higher or lower depending on your Calorie needs.			
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
*Calories per gram:			
Fat	9	Carbohydrate	4
		Protein	4

Table 2: Mexican mint

## Turmeric

The spice which is known as turmeric used in day -to- day life may be the most effective nutritional supplement in existence. Many high-quality studies, mainly in the recent have shown that turmeric has major benefits for our body and brain. The major benefit comes from its main active ingredient that is the curcumin. Turmeric contains bio active compounds with medical properties and has the power to cure many diseases. It is well known for increasing the antioxidant capacity in the body. As we all know Oxidative damage is believed to be



one of the main mechanisms behind aging and many diseases which can be reduced by the consumption of turmeric. turmeric involves many free radicals, highly reactive molecules with unpaired electrons, where free radicals tend to react with the important organic substances, such as the fatty acids, proteins, or sometimes DNA. The main reason is antioxidants are so beneficial and protect the body from free radicals. People commonly use turmeric for osteoarthritis purpose. It is also used for fever, depression, high cholesterol, and also used for a type of liver disease, but there is no good scientific evidence or reference to support most of these uses.



**Fig 3: Turmeric powder**

**Nutritional composition of turmeric per 100 g**

Composition	USDA Handbook 8-2 <sup>a</sup> (Ground)	ASTA <sup>b</sup>
Water (g)	11.36	6.0
Food energy (kcal)	354	390
Protein (g)	7.83	8.5
Fat (g)	9.88	8.9
Carbohydrates (g)	64.93	69.9
Ash (g)	6.02	6.8
Calcium (g)	0.182	0.2
Phosphorus (mg)	268	260
Sodium (mg)	38	10
Potassium (mg)	2525	2500
Iron (mg)	41.42	47.5
Thiamine (mg)	0.152	0.090
Riboflavin (mg)	0.233	0.190
Niacin (mg)	5.140	4.8
Ascorbic acid (mg)	25.85	50
Vitamin A activity (RE)	Trace	ND <sup>c</sup>

<sup>a</sup>Composition of Foods: Spices and Herbs, USDA Agricultural Handbook 8-2, January 1977.

<sup>b</sup>The Nutritional Composition of Spices, ASTA Research Committee, February 1977.

<sup>c</sup>ND = Not detected.

**Table 3: Nutritional content****Black pepper**

Black pepper is one of the most commonly used spices all over the world on daily basis. It's obtained by grinding peppercorns, which are dried berries from the vine *Piper nigrum*. It has the appearance of sharp and mildly spicy flavour that goes well with many dishes. It is high in antioxidants, and has anti-inflammatory properties, it helps to improve blood sugar control, lowers cholesterol levels, may have cancer-fighting properties. They are better to consume with allopathic medicines and are at times well known to be effective in treating diseases like cancer and autoimmune diseases.

**Fig 4. Black Pepper**

Nutrition Facts			
Serving Size (100g)			
Amount Per Serving			
Calories 318			
		% Daily Value*	
<b>Total Fat</b> 3.2g			<b>5%</b>
Saturated Fat 1.2g			<b>6%</b>
Trans Fat 0g			
<b>Cholesterol</b> 0mg			<b>0%</b>
<b>Sodium</b> 32mg			<b>1%</b>
<b>Total Carbohydrate</b> 62g			<b>21%</b>
Dietary Fiber 26g			<b>104%</b>
Sugars 0.5g			
<b>Protein</b> 10g			<b>20%</b>
<div> <div>Vitamin A 5.8%</div> <div>•</div> <div>Vitamin C 31.7%</div> </div> <div> <div>Calcium 43.1%</div> <div>•</div> <div>Iron 150%</div> </div>			
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2400mg	2400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

**Table 4: nutritional content of black pepper****Indian gooseberry**

Gooseberries are small, nutritious fruits that provide many health benefits. It is rich in Vitamin C which is a powerful antioxidant and plays a vital role in improving the nervous system, immune system, and skin. Vitamin B5 is majorly necessary for creating fatty acids, while vitamin B6, helps the enzymes and cells in your body need to function, also it helps to convert food into energy. It plays a significant role in controlling blood sugar levels, Good for heart, Rich in antioxidants and also very easy to add to daily diet



Fig 5: Indian gooseberry

Nutrition Facts			
Serving Size 100 ml			
Amount Per Serving			
Calories 37.12			
		% Daily Values*	
<b>Total Fat</b> 0g			<b>0%</b>
Saturated Fat 0g			<b>0%</b>
Trans Fat 0g			
<b>Cholesterol</b> 0mg			<b>0%</b>
<b>Sodium</b> 25.52 mg			<b>3%</b>
<b>Total Carbohydrate</b> 8.48 g			<b>8%</b>
Dietary Fiber 0g			<b>0%</b>
Sugars 0g			
<b>Protein</b> 0.80 g			<b>0%</b>
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2400mg	2400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Table 5: Nutrition content of Indian gooseberry

### Materials and methods

The materials used for Herbal Sauce incorporated with Indian gooseberry are betel leaves, Mexican mint leaves taken from the cultivation pots, dried Indian gooseberry, turmeric, black pepper, clove, green chilli, cumin, cinnamon, cardamom, garlic, rock salt, jaggery. The herbal leaves are dried powdered and used for better results.





**Fig 6: Dried Mexican mint leaves**



**Fig 7: Dried betel leaves**



**Fig 8: Powdered herbal leaves**

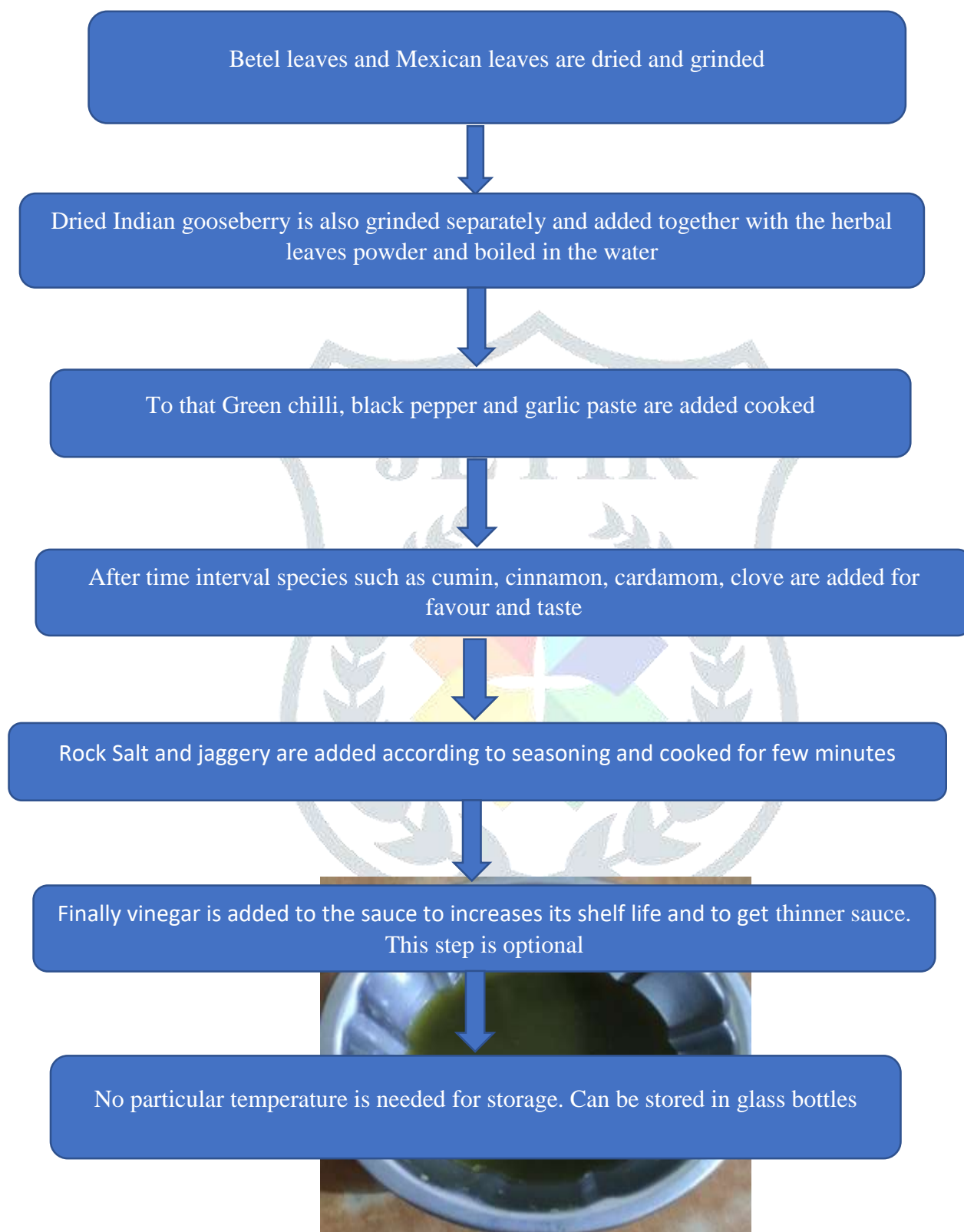


**Fig 9: Dried Indian gooseberry**

### **Preparation of the sample**

The leaves of betel, Mexican mint were weighted and sun-dried for 1 week, followed by crushing in mortar. To achieve fine dry powder, then crushed leaves were further grinded with the help of Mixer Machine. Fine powder is

obtained and then sieving process was done to remove the dust particles from the powder. The dried Indian gooseberry was also grinded separately and mixed with the herbal leaves and boiled. Then green chilli, black pepper, garlic were added along with species such as cumin, cinnamon, cardamom, clove and left in the same to develop the flavour. Finally salt and jaggery are added according to seasoning. Vinegar is added at last to get thinner sauce and also for increasing shelf life of the sauce.



**Fig 10: Herbal sauce incorporated with Indian gooseberry**

### **Benefits of Herbal Sauce incorporated with Indian gooseberry**

They have a holistic approach and aid towards proper absorption and digestion

- They are mostly not disease specific but it act as a preventive medicine that positively effects the overall health and well-being by boosting the immune system



- Since the sauce is incorporated with Indian goose berry which is rich in Vitamin B5 and B6 it helps to convert food into energy
- They are self-contained and are nutritive in nature, and therefore are non-toxic and harmless
- and the herbal sauce can be taken orally, and it helps to ease symptoms of flu as well as the common cold.
- As the sauce is contained of herbal leaves and turmeric it helps to fight infections and boost immune functions. And may also offer pain relief at times
- There is also good evidence for support to COVID-19 since there are many immune boosting ingredients such as betel leaves, turmeric, garlic, black pepper, clove in the sauce.

## Result and discussion

Very fine particle powder was not obtained, since no technical machines such as spray drier or proper roll mills were used for grinding the herbal leaves powder for the sauce. The sauce which is finally obtained has a glossy appearance, thin consistency and a bit of sweet and bitter in taste. No particular temperature is needed for storage of herbal sauce it can be stored even at room temperature for months.

In future Physicochemical and phytochemical characteristics of raw material and Physicochemical and phytochemical characteristics of spices and condiments can be tested. Shelf -life testing of the herbal sauce can also be investigated

The organoleptic evaluation of the samples was conducted by a panel of 5 members for testing the for appearance, consistency, Flavour, aroma using the 5- point Hedonic Rating Scale. The results are reported in the form of bar graph below.

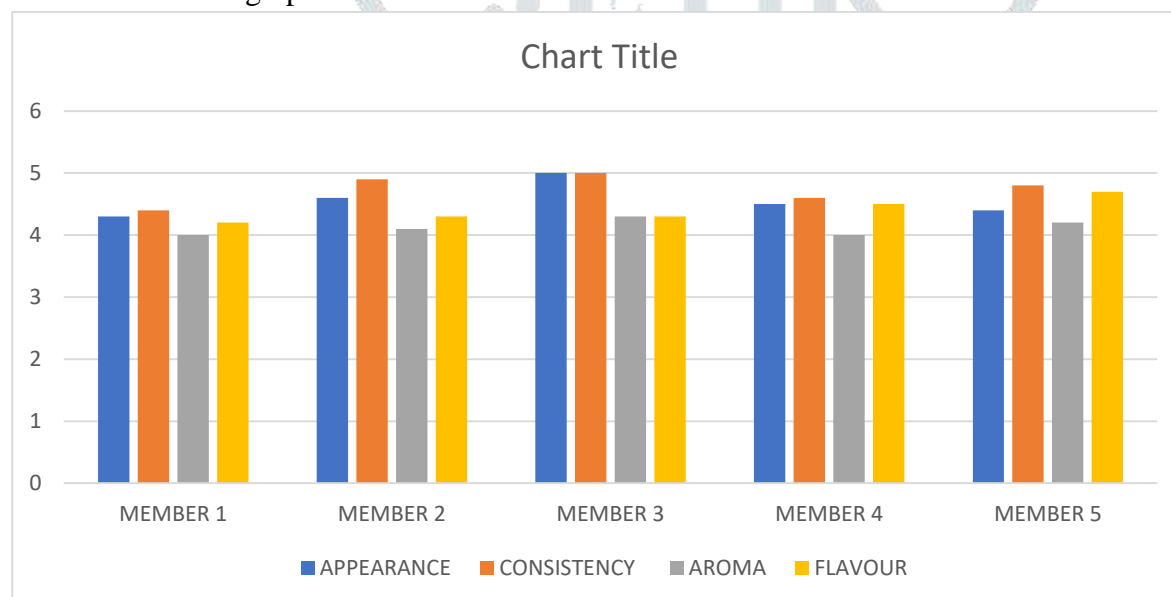


Fig 11. Bar graph representing these sensory analysis

## Review and literature

December 2016 Ferment. Technol. 6(2): 1-7.

1. **Development of ready to eat mint coriander sauce, Poorva Kashyap, ©2016 New Delhi Publishers.**  
In this paper the author reports about the Development of ready to eat mint Coriander sauce with objectives to standardize the method of preparation, preservation and shelf life of the sauce is examined, also their physicochemical, phytochemical and sensory characteristic were reported.
2. **Betel Leaf: The Neglected Green Gold of India P. Guha**  
In this paper the author has extracted oil from the betel leaf using the "Betel leaf oil extractor" designed and developed at IIT, Kharagpur
3. **Development of a Sauce Using Gymnema sylvestre Leaves O. D. A. N. Perera and P. Pavitha Hindawi Journal of Food Processing Volume 2017, Article ID 5196524, 5 pages <https://doi.org/10.1155/2017/5196524>**  
In this paper the author study was focused on developing novel functional food product from G. sylvestre leaves, mainly to supply the health benefit to fast food consumers

## Conclusion

The benefit aspects of the crops as discussed above evidently prove that betel leaf, Mexican mint is one of the most promising commercial crops capable of curing many types of flu and diseases. It is one of the instant side dishes which is used for dipping or used as a condiment. From the results, it has been concluded that the Mexican mint with betel leaves with Indian gooseberry as the main raw material is a wonder remedy for various health issues. It is a great remedy to treat fever, cough, cold, and congestion in babies as well as adults. Apart from that, this herbal sauce offers a wide range of benefits to the body in terms of immune booster. It can be stored at room temperature for more than a month and used.

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