

## Preparation and Evaluation of Panax ginseng syrup

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**Abstract :** The heed on natural medications and their usage have been expanding quickly as of late, even in regions where present day medication is accessible. Plant derived substances and herbal drugs ,recently attracted great interest towards their unique & vast applications. As medicinal herbs, have bioactive compounds in abundance & can be utilized in conventional and current medication. There has been an increasing demand for plant based medicines, health products, pharmaceuticals, food supplements. The Objective of this Study is to enlighten the various immune enhancing properties of ginseng & to deliver these immune strengthening properties of ginseng it has been formulated into a syrup dosage form. Formulation of syrup was designed by utilizing extracts of Panax Ginseng, Sucrose, Benzoin & required quantity of Distilled water. The prepared herbal syrup was evaluated for different physicochemical parameters like pH, color, odour, taste, density, specific gravity, viscosity and stability. A review of Panax ginseng chemical constituents present in various parts of Panax ginseng is given in the present article. This may be useful in discovering potential therapeutic effects & developing new formulations.

**Keywords :** Herbal syrup, Panax ginseng, Bioactive compounds, Immune strengthening.

### Introduction:

The immune system protects the body against disease or other potentially damaging foreign bodies. When functioning properly, the immune system identifies and attacks a variety of threats, including viruses, bacteria and parasites, while distinguishing them from the body's own healthy tissue. The immune system is spread throughout the body and involves many types of cells, organs, proteins, and tissues such as WBC'S, spleen, bone marrow, lymph nodes, phagocytes etc. Immunity can be enhanced

by eating healthy, Exercising regularly, etc<sup>[1-3]</sup>. Ginseng, the root of *Panax ginseng* Meyer, Family Araliaceae, one of the most well-known oriental medicinal herbs and has been widely used as an herbal remedy for various disorders in Korea, Japan, China, and the United States<sup>[4], [6]</sup>. The pharmacological effects of ginseng have been demonstrated in cancer, diabetes, cardiovascular diseases and have been used for promoting immune function, central nervous system (CNS) function, relieving stress and for its antioxidant activities<sup>[5]</sup>. Ginseng contains saponin (called as ginsenosides), polyacetylenes, polyphenolic compounds, etc<sup>[4]</sup>. These ginsenosides, which are extracted from the ginseng roots, leaves, stems, and fruit, have multiple pharmacological effects<sup>[6]</sup>. Ginseng is well known as a immune enhancer. The roots (mostly), stem and leaves are used to maintain immune homeostasis and enhance resistance against microbial attack<sup>[4]</sup>. Ginseng helps in regulating cytokine production, enhancement of humoral immune responses, restoration of T lymphocytes function, production of antibodies, stimulate the phagocytosis of reticuloendothelial system, etc<sup>[5], [7]</sup>.

To deliver the immune strengthening properties of ginseng it has been formulated into a syrup. Syrups can be made from synthetic as well as herbal sources. Syrups made from synthetic chemicals may show various serious side effects like headaches, dizziness, rashes, bloating, nausea, diarrhea, and digestive problems and even hepatotoxicity over long term use where as syrups made from natural herbs like *Panax ginseng* are More affordable than conventional medicine, It Stabilizes metabolism, Strengthens the immune system, Fewer side effects and is cost effective<sup>[1-3]</sup>.

## Experimental:

### Preparation of herbal syrup:

- 1. Material and method :-** Dried root of *Panax ginseng* is collected, cleaned and dried. Ginseng saponins have been extracted by different techniques like Soxhlet, heat-reflux, shaking, and ultrasound-assisted methods<sup>[8]</sup>.
- 2. Preparation of simple syrup IP:-** 66.7 g of sucrose was dissolved in sufficient distilled water to obtain 100 ml of concentrated simple syrup. The solution was filtered and the simple syrup was used as vehicle<sup>[9]</sup>.
- 3. Preparation of (medicated) ginseng syrup -** The powdered ginseng extract was dissolved in purified water and heated until the volume of their syrup is reduced to half and cooled and later it was filtered using a muslin cloth.
- 4. Preparation of final syrup -** Ginseng extract syrup should be added to sugar syrup by simple stirring to obtain uniform and consistent syrup.
- 5. Composition of herbal syrup:**

S.No	Ingredients	Weight(gms)
1.	Sucrose	33.35 gm
2.	Ginseng syrup	8 gm
3.	Water	Quantity sufficient

## Evaluation:

### Physical appearance :

- 1. Color examination:** 5ml of syrup was taken in a watch glass and viewed against a white light for its color by naked eye<sup>[10]</sup>.
- 2. Odor examination:** The final syrup was tested for its odour by smelling 2ml of the syrup individually with an interval of 2 minutes<sup>[10]</sup>.
- 3. Taste examination:** A drop of final syrup was placed on the tongue and examined for its taste<sup>[10]</sup>.

4. **Determination of pH:** Take 10 ml of final syrup in a 100 ml volumetric flask and make up the volume upto 100 ml using distilled water. Then the solution was subjected to sonicator for 10 minutes and pH was measured using a digital pH meter <sup>[10]</sup>.
5. **Determination of Density:** Density is determined using a 25ml density bottle. Firstly, the weight of an empty bottle was noted. The liquid whose density is to be determined was filled in the 25ml density bottle and weighed. Then the weight of the syrup was calculated by subtracting the weight of the empty bottle from the weight of the filled bottle. The density of the syrup was calculated using the formula : Density=mass/volume <sup>[10]</sup>.
6. **Specific gravity:** Specific gravity is measured using a pycnometer. The weight of the water filled calibrated pycnometer was taken. It was then filled with final syrup and the temperature of pycnometer was adjusted to 25°C. Excess of the syrup was removed and weight of the filled pycnometer was noted. Specific gravity of the final syrup was obtained by dividing the weight of the syrup contained pycnometer from that of the weight of the water contained pycnometer both determined at 25°C <sup>[10]</sup>.
7. **Determination of viscosity :** A clean Ostwald viscometer was taken which was previously cleaned with acetone or chromic acid. Place the viscometer in vertical position and fill it with water upto the mark G. Note the time required in seconds for the water to flow from mark A to mark B. Repeat this step for atleast 3 times to get accurate reading. Now fill the viscometer with the test solution upto mark A and note the time required for the liquid to flow to mark B. Density of the liquid can be obtained from the density determination experiment. Viscosity = (density of test liquid x time required to flow test liquid ÷ density of water x time required to flow water) x viscosity of water <sup>[11]</sup>.
8. **Stability Testing (72HRS) :** Stability testing of the prepared syrup was prepared by subjecting the samples to accelerated temperature conditions. Different portions of the final syrup were taken in a amber color bottles and were kept at room temperature (38°C) and at accelerated temperatures (48°C) respectively. The samples were then tested for all the physicochemical parameters, turbidity of the solution at interval of 24hr, 48hr and 72hr and the changes observed were noted <sup>[12]</sup>.

## Results :

**Table 1:- Result of physicochemical parameters.**

Batch	Colour	Odour	Taste
1	Brownish	woody	Sweet-woody

**Table 2:- Quantitative evaluation of developed Herbal syrup dosage form.**

S.No.	Parameter	F1
1.	Density(gm/ml)	1.15
2.	Viscosity(poise)	0.032
3.	Specific gravity	1.37
4.	pH	7.8

**Table 3:- Short term Stability study of the developed Panax Ginseng Immunoenhancer syrup dosage form.**

Sample Code	Time Duration (Hrs)	Temperature (°C)	Physicochemical Parameters						
			Color	Odour	Taste	pH	Density	Specific Gravity	Turbidity
1a	24 Hrs	Room Temp	NC	NC	NC	7.8	1.15	1.37	No
		48°C	NC	NC	NC	7.8	1.15	1.37	No
1b	48Hrs	Room Temp	NC	NC	NC	7.8	1.15	1.37	No
		48°C	NC	NC	NC	7.8	1.15	1.37	No
1c	72Hrs	Room Temp	NC	NC	NC	7.8	1.15	1.37	No
		48°C	NC	NC	NC	7.8	1.15	1.37	No

## Discussion

Synthetic drugs or dosage form are found to produce instant pharmacological activity but also cause various side effects for this purpose the need of natural medications and their usage have been expanding quickly as of late, even in regions where present day medication is accessible.

Panax ginseng was studied for its properties & it can primarily act as an immune booster without causing side effects .To deliver this immune booster it is formulated in to a monophasic liquid dosage form. The developed herbal syrup was evaluated for *invitro* test like organoleptic properties, pH, density, viscosity, specific gravity & short term stability studies.

The results for organoleptic properties (displayed in table 1) indicate that there was no change in its color odour, & taste .The herbal syrup was also evaluated for other properties like density, viscosity, specific gravity and pH where the syrup had 1.15g/ml, 0.032 poise, 1.37 & 7.8 respectively (refer table 2).Table 3 reveals that no changes were observed in all the tested physicochemical parameters such as during stability studies when samples where tested & observed after a time duration of 24hrs, 48hrs, 72 hrs.Therefore the results conclude that Panax Ginseng syrup provide good stability in *in vitro* studies & can be used to boost the immunity which may help to prevent the occurrence of various diseases occur due to microbial attacks like Cold Chickenpox, German measles ,Whooping cough, Bubonic plague,TB (Tuberculosis) ,Malaria ,Ringworm ,Athletes' foot & also in treating breast cancer.

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