

Preparation and Evaluation of Immune Boosting Syrup Using Wheat Grass & Pumpkin Seeds Extract

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Abstract:

A research work on Preparation and Evaluation of Immune Boosting Syrup using Wheat grass & Pumpkin seeds extract. Human immune system is a complex network of cells, tissues, organs and proteins. When bacteria, virus, toxins, chemicals invade the body, immune system recognizes an antigen and help the body fight infections and other diseases by producing antibodies. Antibodies are proteins that work to attack the antigen and also weaken, destroy antigens. In this research work wheat grass and pumpkin seeds used as immune boosting agents. Wheat grass and pumpkin seeds contain variety of nutrients, minerals, vitamins, ant-bacterial, anti-microbial, anti-oxidizing agents that boost the immune system. Extracts of natural immune boosters added to the sucrose syrup one by one. Add orange syrup as flavoring agent to the syrup. A lemon yellow color, moderate viscous, orange flavored syrup, weak acidic p^H, good theology of syrup was prepared. Stability analysis studies of syrup at different temperatures gives good results.

Keywords: Immune Boosting Syrup, Wheat Grass, Pumpkin Seeds

1. INTRODUCTION

Syrup is a monophasic liquid dosage form is characterized by their homogeneity, prompt action and ease of administration. Oral liquids are the simplest form of preventing medication for rapid absorption of the drug. Absorption of the drugs from the GI tract is most rapid when the drugs are administered in aqueous solutions [1]. Viscosity of syrup is an important property in physical preparations. It should have desired viscosity so that it may be removed from the container easily. When they are strong attractions between the molecules of a liquid, the viscosity will be high; when the attractions are weak the viscosity will be low [2]. Syrups offer a pleasant means of administering disagreeable tasting drugs. Syrups are most frequently administered to pediatric patients. Some drugs are unstable in the form of aqueous preparations. Uses of suitable preservatives or preservation methods are helpful in maintaining the stability of liquid preparation and prevent the microbial growth throughout its shelf life [3]. Viscosity and consistency directly relates with stability of solutions. If viscosity increases, then there is a chance of

increase in stability. Concentration of sucrose in sugar based syrup is very important. A dilute solution of sucrose supports the growth of microorganisms where as saturated solutions may lead to crystallization of a part of sucrose under conditions of varying temperatures. Syrups containing lesser concentration of sucrose required anti-microbial preservatives [4]. Immunity booster syrup develops an inbuilt strong defense mechanism. It acts as a safety shield against diseases and complaints occurring due to seasonal change and other prevailing infections. It helps body to recover easily in case of any illness [5].

Wheat grass:



Figure 1: Wheat grass

Tritium aestivum a common name for the shoots of the wheat plant. Wheat grass has a high level of chlorophyll. The structure of chlorophyll is similar to that of hemoglobin. Sometimes it is called as gem blood. The chlorophyll in wheat grass has anti-bacterial properties, anti-inflammatory, anti-oxidant effects [6]. Wheat grass contains high amount of a super food packed nutrients and anti-oxidants it may help boost immune system, aid in digestion, and give energy. Wheat grass enhances the function of immune system. This can help ward off infection and disease [7]. Wheat grass is an excellent source of many different vitamins and minerals. It is especially high in vitamin A, C and E as well as iron, magnesium, calcium and ascorbic acid. It also contains several important anti-oxidants, including glutathione [8]. Recently a study in 60 people with breast cancer showed that wheat grass reduced some of the harmful effects of chemotherapy. Specifically, wheat grass lowered the risk of myelotoxicity. Wheat grass may have neuroprotective properties, which means that it might help improve cognitive functions and lower the risk of conditions such as Alzheimer's disease [9].

Pumpkin seeds:



Figure 2: Pumpkin



Figure 3: Pumpkin seeds

Cucurbit maxima is a scientific name of pumpkin and belonging to the family cucurbitaceous. Flat, asymmetrically oval, light green in color the seeds are rich caloric and nutrient, protein, dietary fiber. The seeds are a moderate source of riboflavin, foliate, panthothenic acid, sodium, potassium rich in anti-oxidants, healthy fats (leonine, politic, oleic acid benefits of eating pumpkin seeds include boosting bone health, immune system. Pumpkin seeds have a high content of vitamin-E helps strengthen the immune system and maintain healthy blood vessels. Vitamin-E is a powerful lipid-soluble, anti-oxidants it prevents tissue cells from free radical mediated oxidant injury [10]. Pumpkin seeds are rich in the amino acid tryptophan, to treat chronic insomnia because the body converts it into serotonin, the feel good or relaxing hormone. Glutamate is essential for the synthesis of gamma-amino butyric acid (GABA). GABA an anti-stress neuron chemical in the brain helps reduce anxiety, neurons irritability, and other neurotic conditions. They are also rich in polyunsaturated fatty acids and anti-oxidants such as selenium and beta carotene. Seeds contain good amounts of essential minerals like copper, manganese, potassium, calcium, iron, magnesium, zinc and selenium. Manganese is an important co-factor for anti-oxidant enzyme, superoxide dismutase. Therefore, consumption of pumpkin kernels helps develop resistance against infections [11].

Oranges:

The vitamin-c found in oranges, boosts the body’s immune system to protect against viruses and germs. They increase the production of WBC which helps fight viruses. And also protects the cells from damage [12]. Oranges contains a variety of vitamins, minerals and phytonutrients. Phytonutrients are naturally occurring plant compounds, flavonoids and colorful carotenoids, work to support the immune system by fighting inflammation and helping cells communicate with each other [13, 14].

2. MATERIALS AND METHODS

Wheat grains and pumpkin seeds and oranges were purchased from local market at vizianagaram, sucrose and sodium benzoate were purchased from Yarrow chem products, Mumbai by St. Ann’s college of pharmacy.

3. FORMULATION OF IMMUNE BOOSTING SYRUP

Table 1: Formulation of Immune boosting syrup

Ingredients	Quantity	Purpose
Sucrose syrup	85	Base
Wheat grass extract	15	Immune boosting agent
Pumpkin seeds extract	10	Immune boosting agent

Orange syrup	15	Flavouring agent
Sodium benzoate	0.2	Preservative

*Quantity in ml

4. METHOD OF PREPARATION

Soaking:



Figure 4: Soaking of wheat grains

Wheat grains were purchased from local market for soaking. Firstly wheat grains were washed two times with fresh water. Washed grains were taken in clean bowl and add some water up to some level. Soak the wheat grains over night.

Cultivation of wheat grass:



Figure 5: sowing the seeds



Figure 6 1st growth (After 6 days)



Figure 7: 2nd growth (After 8 days)



Figure 8: After 10 days

Select the appropriate site for cultivation. Dig the land using tooling equipment. Sowing the overnight soaked wheat grains on the land. Cover the grains with soil. Sprinkle some water on the soil. After three days the seeds started germination we observe the growth of wheat grass day by day. Collect the wheat grass after one week.

Preparation of wheat grass powder:



Figure 9: Collecting wheat grass



Figure 10: Drying

Dry the wheat grass in direct sun light until it becomes dried. Cut the grass into small pieces and grind into a fine powder. Sieve the powder using 100# mesh and then packed in a shelf shield cover.

Preparation of pumpkin seeds powder:

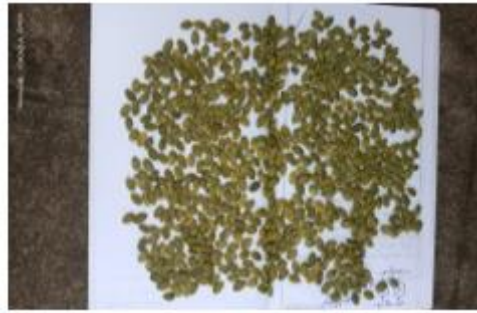


Figure 11: Drying of pumpkin seeds

Purchase pumpkin seeds from local market. Roast the seeds in a dry pan at low flame. Roasted seeds were grind into a powder and sieve it. Store it in a air tight shelf shield cover.

Extractions of wheat grass powder and pumpkin seed powder:



Figure 12: Dried wheat grass & pumpkin seeds



Figure 13: Dry powders of wheat grass & pumpkin seeds



Figure 14: Extraction of wheat grass



Figure 15: Extraction of Pumpkin seeds

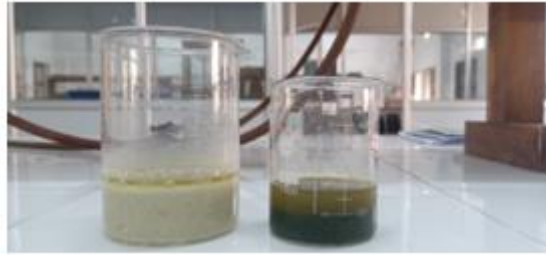


Figure 16: Extractions of wheat grass



Figure 17: Filtration of wheat grass extract and pumpkin seed



Figure 18: Filtration of pumpkin seed extract



Figure 19: Filtered extractions

Take a two neat and clean bowls and add wheat grass powder in one bowl and pumpkin seed powder in another bowl. Add required quantity of water to powders. Boil the two mixtures for about 20-30 minutes. Filter the solution using muslin cloth separately then collect the liquid extract in an air tight container separately. In the pumpkin seed liquid extract after filtration an oil layer formed on the top of the extract. Separate the oil from the extract by separating funnel. After that only the pumpkin seed extract is stored in a suitable container.

Preparation of sucrose syrup:

Take 66.7grams of sucrose in a neat & clean beaker add sufficient quantity of distilled water to it. Boil the mixture until sucrose completely dissolved.

Preparation of orange syrup:

Take the fresh oranges peel off the skin & place the oranges in a neat clean bowl. Add sufficient quantity of sugar close the lid & store for 3 days. After 3 days mix it well separate the liquid extract. The extract was boiling for some time to get a syrup consistency filter it & stored in a closed container.



Figure 20: Oranges



Figure 21: Peeled oranges



Figure 22: Oranges & sugar



Figure 23: Boiling



Fig.no.24 Orange syrup

PREPARTION OF IMMUNE BOOSTER SYRUP

Take sucrose syrup in a beaker; add required quantity of wheat grass extract & pumpkin seeds extract to it. Boil the mixture on water bath until required consistency. Add orange syrup as a flavouring agent and

sodium benzoate as a preservative to the syrup. Mix it well cool the mixture and stored in a suitable container.



Figure 25: Immune boosting syrup

5. EVALUATION TESTS

Physical characterization:

Color, odour, consistency of syrup were checked manually.

P^H test:

1 gram of sample was taken in a beaker add 10 ml of distilled water. P^H of sample was measured by P^H paper. The color may be compared to chart supplied with the paper to give P^H of the sample.

Viscosity:

Syrup viscosity was measured by using Ostwald viscometer. Required quantity of sample was poured into large bulb, suck the sample from small bulb was there at right side. Up to the mark close the way with finger. Remove the finger from open loop of small bulb. Observe the sample travel from upper mark to lower mark. Note the time. This procedure was done with sample as well as sample water. Repeat the experiment for 3 times.

Stability study:

Required quantity of samples were taken in a suitable container place it in a different locations at 25°, 27°, 28°c up to 10 days. After 10 days check the organoleptic characteristics, P^H, and viscosity.

Identification test for proteins:

Take 2ml of extract in a test tube add drop wise freshly prepared ninhydrin reagent solution. Presence of protein in extract gives purple colour.

Identification test for alkaloids:

Add tannic acid solution to the 2ml of extract in a test tube. Presence of alkaloids buff colour appears.

Identification test for flavanoids:

Take 2ml of extract in attest tube. Deep yellow colour appears by adding few drops of NaOH solution and by adding HCl solution the extract change colour solution to colourless.

6. RESULTS & DISCUSSION

Table 2: Results & Discussion

TEST	OBSERVATION
COLOR	Lemon yellow
ODOUR	Orange fragrance
TEXTURE	Thick smooth viscous
p ^H	5.5
VISCOSITY	77.07 centipoise
STABILITY	Stable at all temperatures
TEST FOR FLAVANOIDS	Colour solution to colourless (Wheat grass)
TEST FOR ALKALOIDS	Buff colour (Pumpkin seed)
TEST FOR PROTEINS	Purple colour (Pumpkin seed)

DISCUSSION

Immune boosting syrup boosts the immune system. It helps to treat nutritional deficiencies. It kills the harmful germs and removes the toxins from the body and it enhances the function of our immune system. It improves metabolism, reduces the stress. Finally the research work shows the results of immune boosting syrup has a lemon yellow colour, P^H of 5.5, thick smooth viscous of 77.07 centipoise, identification test of flavanoids, alkaloids, protein test shows that presence of wheat grass and pumpkin seeds.

7. CONCLUSION

The product of immune boosting syrup gives good health because it contains high rich of nutrients, vitamins, proteins of wheat grass and pumpkin seeds. Its free radical mechanism and its highly nutritional values help to weak cells and improve the regeneration of cells.

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