

Formulation and Evaluation of Polyherbal Energy Drink

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Abstract: *In recent years, there has been an increase in the consumption of energy drinks. Nowadays, energy drinks have become a common choice of beverages. Sugar and caffeine are the two major ingredients in energy drinks. The main purpose of the study is to prepare a polyherbal energy drink. The preparation contains poly herbs such as Ashwagandha, Amla, Liquorice, Tulsi and Fennel. Polyherbal energy drink was prepared by using traditional herbs having proved nutritional potential. A mixture of herbal extracts has been used in the current research for the development of a novel and potent energy drink. The prepared polyherbal energy drink was evaluated immediately after preparation and all the parameters were tested. The prepared formulation is beneficial for all the people. The formulation is prepared from the natural herbs so the chances of side effects are lower than the soft drinks. The developed herbal drink provides an economical and feasible option for the consumers with very good taste combined with potential health benefits. All the herbs used in this preparation are easily available during any season and are not costly. This herbal energy drink is a natural option to synthetic drinks along with several health benefits.*

Keywords: Polyherbal Energy Drink, Beverage, Evaluation, Health Benefits

I. INTRODUCTION

The Food and Drug Administration (FDA) defines energy drinks (EDs) as “a class of products in liquid form that typically contains caffeine, with or without other added ingredients”. An energy drink is a type of drink containing stimulant compounds, usually caffeine, which is marketed as providing mental and physical stimulation (marketed as “energy”, but distinct from food energy). India has used herbal drugs for long safe and continuous uses as alternatives. Medicines as well as over the counter self-medications by Ayurveda doctors. Herbal ingredients play an important role in the sensory evaluation of energy drinks as well as improving their health has beneficial effects. Herbal extracts are the commonly consumed drinks/beverages, which are brewed from several parts of plants. There are many kinds of herbal teas consumed worldwide by different cultures for both the prevention of several diseases, taste, and pleasure. Herbal beverages have been documented to be consumed by man since the times of the ancients. These beverages contain various herbs, spices, and fruits which are purported to have health-boosting effects; however, some may also contain toxic plant fractions that may be injurious to health. In recent times, insights into the concept of functional foods have awakened interests in medicinal beverages; there have also been a renewed interest in the production of “bitters,” which are herbal mixtures with possible health benefits. The main purpose of this research is to prepare a polyherbal energy drink. The preparation contains poly herbs such as Ashwagandha, Amla, Liquorice, Tulsi and Fennel have proved pharmacological activity with no side effects.

Ashwagandha (*Withania somnifera*, fam. Solanaceae) is commonly known as “Indian Winter cherry” or “Indian Ginseng”. It is one of the most important herbs of Ayurveda (the traditional system of medicine in India) used for millennia as a Rasayana for its wide ranging health benefits. Rasayana is described as an herbal or metallic preparation that promotes youthful state of physical and mental health and expands happiness.

Amla (*Phyllanthus emblica*) is undoubtedly a powerhouse of nutrients. The essential minerals and Vitamins that it contains are essential not only for our body’s health, but also for preventing some of the common diseases. Amla is an excellent source of vitamin C; hence it helps boost your immunity, metabolism and prevents viral and bacterial

infections, including cold and cough. According to Ayurveda, Amla balances all the processes in the body and brings equilibrium to all three doshas- vata, kapha, and pitta.

Tulsi (*Ocimum sanctum*) is referred to as the “Queen of herbs” and is regarded as the most sacred herb of India. Tulsi has been used for thousands of years in Ayurveda for its diverse healing properties.

Liquorice (*Glycyrrhiza glabra*), also known as sweet wood, is a very unique herb. It can have stimulating effects that boost your energy and adrenal system right away. It's also frequently used in formulas with other herbs because it boosts and synergizes their effects.

Fennel (*Foeniculum vulgare*) In foods and beverages, fennel oil and fennel seed are used as flavoring agents. Fennel is known to stimulate a healthy appetite and digestion. Fennel gives a delicious flavor and aromatic lift to herbal blends and cough syrups.

This herbal formulation was prepared by using different herbs which have shown pharmacological activity with no side effects. A mixture of herbal drugs has been used in the current research for the development of potent energy drinks. The polyherbal energy drink is the best choice for the replacement of soft energy drinks usage and tackles the adverse effects.



Fig. 1 Ashwagandha



Fig. 2 Amla.



Fig. 3 : Tulsi.



Fig. 4 : Liquorice.



Fig. 5 : Fennel

II. MATERIAL AND METHODS

Herbal Energy drink was prepared using Ashwagandha, Amla, Liquorice, Tulsi, Fennel, Honey were purchased from the local market.

Formulation Table

Sr. no	Ingredients	Qty. given	Qty. taken
1	Amla	27.8 gm	13.9 gm
2	Liquorice	27.8 gm	13.9 gm
3	Ashwagandha	27.8 gm	13.9 gm
4	Tulsi	9.6 gm	4.8 gm
5	Fennel	7 gm	3.5 gm
6	Honey	Quantity sufficient	Quantity sufficient

7	Methyl paraben	0.8 gm	0.4 gm
8	Distilled water	800 ml	400 ml

TABLE 1 : Ingredients with their prescribed quantity in the formulation of Energy Drink.

PROCEDURE

Polyherbal energy drink was prepared by following steps :-

1. All the ingredients were weighed accurately , Except Honey
2. Herbs are mixed with 400ml of water.
3. The mixture was boiled until the total volume became one fourth of the initial volume.
4. Then the decoction was cooled and filtered.
5. After cooling, a sufficient amount of honey is mixed with drink.
6. and then a required quantity of methyl paraben was added as a preservative to the mixture.
7. Prepared drink was filled into a tight container.
8. The final herbal drink was then subjected for evaluation.

III. EVALUATION OF POLYHERBAL ENERGY DRINK

1. Quality Evaluation

Quality evaluation of prepared polyherbal energy drinks was essential for the efficacy, safety determination. Both physicochemical and phytochemical evaluation was carried out by comparing it with the standard parameters. Sensory evaluation was also performed in terms of sight, smell, taste, touch and hearing. The freshly prepared drink was also evaluated for the presence of any microbial contamination while processing. This is done by specifying the total count of yeasts and molds, and the absence of specific objectionable bacteria. This is suitably determined using pharmacopoeial procedures.

2. Sensory Evaluation

Consumer awareness concerning beverages has increased the number of positive attributes desired for these products, Apart from refreshment. However, no matter how nutritious the beverage, the taste must be acceptable or it will not be consumed. Sensory analysis was performed by using a nine points hedonic rating scale by a panel of five people. The parameters for evaluation include appearance, color, taste, flavor, consistency and overall acceptability of energy drink.

3. Physicochemical and Phytochemical Evaluation

Various physicochemical parameters like pH, titratable acidity, total soluble solids, and total sugars were performed. Moreover, the prepared drink was analyzed for the presence of carbohydrates, proteins, glycosides, tannins, polyphenol and flavonoids using standard procedures.

4. Stability Studies

The prepared drink was analyzed for organoleptic attributes, physicochemical parameters and phytochemical parameters at an interval of 15 days for any change during storage period of three months.

IV. PHYTOCHEMICAL TEST FOR POLYHERBAL ENERGY DRINK

1. **Physical appearance :-** The polyherbal energy drink was examined for physical appearance in terms of color, odor
2. **Test for carbohydrates :-** 1-2 drops of dilute iodine + 1-2 ml of sample which shows red or brown color.
3. **Test for alkaloids:-** Dragondroff's test : 2-3 ml sample +few drops of Dragendorff's reagent solution turns into orange brown ppt.
4. **Test for flavonoids:-** Small amount of sample mixed with lead acetate solution which shows yellow ppt.
5. **Test for tannins and phenolic compounds :-** Small amount of sample + acetic acid which gives red color.
6. **Test for proteins:-** 2-3 ml of sample + 2 ml of biuret reagent then mix vigorously solution shows purple color.
7. **Test for fats :-** Take a small amount of sample on a piece of filter paper, dry the paper in sunlight, observe the paper, and an oily patch on the paper indicates the presence of fat.

8. Determination of pH :- The pH of the energy drink was checked by using a calibrated digital pH meter at constant temperature and the pH was noted.

V. RESULT AND DISCUSSION



Fig 6 : Polyherbal Energy Drink.

Sr. no	Parameter	Observation
1	Colour	Reddish brown
2	Odour	Pleasant
3	Taste	Sweet
4	pH	4.35

TABLE NO. 2 :- Evaluation table of Polyherbal Energy Drink



Fig. 7 : Phytochemical Parameter

Sr. no	Phytochemicals	Observation
1.	Carbohydrates	Present
2.	Alkaloids	Present
3.	Flavonoids	Present
4.	Proteins	Absent
5.	Tannins and phenolic compounds	Present
6.	Fats	Absent

TABLE No 3 :- Phytochemical Parameter of Polyherbal Energy Drink.

VI. DISCUSSION

The prepared polyherbal energy drink was evaluated immediately after preparation and all the parameters were tested. The final polyherbal energy drink was found to have a pH 4.35. The observed parameters like color, odor, and taste have been tested. In order to evaluate the suitability of the formulation for nutritional purposes, phytochemical and

phytochemical parameters were carried out. Preliminary phytochemical analysis of polyherbal energy drinks showed the presence of alkaloids, carbohydrates, tannins, flavonoids, and phenolics. Phenolics and flavonoids are a wide class of chemical compounds found in plants. They report quality and nutritional value and play a vital role in human fitness. Crude tannin is the compound present in the plants. Tannins are the polyphenols that are responsible for the astringent flavor of food and are anti- carcinogenic.

VII. CONCLUSION

The prepared formulation is beneficial for all the people. The formulation is prepared from the natural herbs so the chances of side effects are lower than the soft drinks. This herbal energy drink is a natural option to synthetic drinks along with several health benefits. This is a good supplement for freshly recovered from the illness and gives freshness to the person. All the herbs used in this preparation are easily available during any season and are not costly thus the product is economically feasible.

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