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Preparation and Evaluation of Immunity Boosting Rasayan Kvatha

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ABSTRACT

Very booming now a day pandemic disease is COVID-19 worldwide caused more than 1.21 million deaths and may expecting more in coming days. COVID-19 caused by Novel CoV (Corona Virus)-2019 and mainly affects respiratory system. In Ministry of AYUSH guidelines suggested to take a 'health drink as; herbal tea/ decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger) and Munakka (Raisin) - once or twice a day. In current research work the immunity boosting rasayan kvatha and evaluation did. The various physiochemical parameter like pH, Specific gravity, viscosity etc determined for three sample preparation. AST study also carried out for all prepared preparation and stable formulation (F3) tested for antimicrobial study against *Bacillus subtilis and Staphylococcus aureus*. The F3 formulation found to be stable and shows antimicrobial activity against tested pathogens.

Keywords: Immunity, Kvatha, Tulsi, Evaluation, Antimicrobial.

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INTRODUCTION

Various epidemic respiratory diseases emerges now a days, common cold, influenza, flu, pneumonia, whooping cough etc. Very booming now a day pandemic disease is COVID-19 worldwide caused more than 1.21 million deaths and may expecting more in coming days. COVID-19 caused by Novel CoV (Corona Virus)-2019 and mainly affects respiratory system (Ahad HA., *et al*. 2020)[1]. Mostly in various epidemic respiratory diseases it is suggested that enhance the immunity by regular exercise, food and supportive lifestyle. Making healthy lifestyle choices by consuming nutritious foods and getting enough sleep and exercise are the most important ways to boost our immune system. In addition, research has shown that supplementing with certain vitamins, minerals, herbs, and other substances can improve immune response and potentially protect against illness (Chindarkar P., 2020)[2]. The Ministry of AYUSH has recommended the some self-care guidelines as preventive measures and to boost immunity with special reference to respiratory health (Anonymous; 02/06/2020)[3]. In that guidelines they also suggested to take a 'health drink as; herbal tea/ decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger) and Munakka (Raisin) - once or twice a day. Add jaggery (natural sugar) and / or fresh lemon juice to your taste, if needed.' (Anonymous; 13/07/2020)[4].

The medicinal plants like tulsi, lemongrass, lavang, sunthi, dalchini, kalimiri and haldi have well known for immunity booster/enhancer. In current research work author prepare the immunity boosting rasayan kvatha and evaluated it first time. In present study ingredient selected on basis of their individual proven pharmacological study like Tulsi plant and turmeric rhizomes known for immunity boosting, lemongrass plant, clove buds, dry ginger, cinnamon bark and black pepper consist terpenoids and they are have a antimicrobial activity.

MATERIALS AND METHOD

Rasayan kvatha is prepared by slight modification in Charaka Samhita, sutrathana Adhaya 4 ; 8-1/2- .All the plant materials were coarsely powder, weighed separately as per Table 1 then boiled with water to make decoction and reduced to one- fourth. Resulting solution filtered, labelled and stored at room temperature for further evaluation.

Table 1: Immunity Boosting Rasayan Kvatha

Ingredient			Qty (g)		
Common name	**English Name**	**Biological Source**	F1	F2	F3
Tulsi	Ocimum	*Ocimum sanctum*	10	10	10
Lemongrass	Lemongrass	*Cymbopogon citratus*	10	10	10
Lavang	Clove bud	*Eugenia caryophyllum*	5	2.5	1

Sunthi	Dry Ginger	*Zingiber officinale*	8	4	2
Dalchini	Cinnamon	*Cinnamum zeylanicum*	2	2	2
Kalimiri	Black Pepper	*Pipper nigrum*	2	1	1
Haldi	Turmeric	*Curcuma longa*	3	2	2
Jagerrry			q.s	q.s	q.s
Water			100ml	100ml	100ml

Physicochemical Parameter

Rasayan kvatha was evaluated for various physicochemical parameters such as physical appearance, pH, Specific Gravity and viscosity. For determination of pH 10%v/v solution prepared and specific gravity determined by specific gravity bottle (Khandelwal KR; 2005, Kokate CK; 1994)[6,7]. For determination of viscosity Ostwald's viscometer used.

Accelerated Stability Testing (AST)

Stability testing of the prepared rasayan kvatha was performed on keeping the samples at accelerated temperature conditions. Nine portions (F1, F2, F3 x 3=9) of the rasayan kvatha were taken in amber colored glass bottles and were kept at accelerated temperature at 4^0C, Room temperature and 47^0C respectively (Kumar SP, Nayak DP; 2013)[5,8]. The samples were tested for all the physicochemical parameters, turbidity and homogeneity at the interval of 24 hr, 48 hr and 72 hr to observe any change.

Figure 1: Rasayan Kvatha

Antimicrobial Study

The formulations those were found to be stable in AST will take for antimicrobial study. The screening of anti-microbial efficacy of the rasayan kvatha was aseptically performed on *Bacillus subtilis and Staphylococcus aureus* by using Dip well Agar Diffusion Technique. A well was prepared in the plates (containing 15ml of Nutrient and MacConkey agar medium respectively for both bacteria's). 100µl of the test compound (rasayan kvatha) was introduced into the well. The

standard antibiotic discs like streptomycin were used as a standard. The plates were incubated overnight at 37°C. Efficiency of rasayan kvatha was determined by measuring the diameter of zone of inhibition (Mandal SM., *et al.*, 2007)[9].

RESULTS AND DISCUSSION

The prepared rasayan kvatha was evaluated immediately after preparation and all the tested parameter along with turbidity/homogeneity were compared with the changes in accelerated stability testing (AST), F3 formulation found to be stable (Figure 1). The rasayan kvatha (F3) found to have pH 4.5 and specific gravity 1.1540g/ml (Table 1).

Table 1: Physicochemical Parameters of Immunity Boosting Rasayan Kvatha.

Parameter	Inference		
	F1	F2	F3
Color	Brown	Green	Light green
Odor	Aromatic	Aromatic	Aromatic
Taste	Sweet	Sweet	Sweet
pH	4.9	4.7	4.5
Specific Gravity	1.1760g/ml	1.1570g/ml	1.1460g/ml
Viscosity	0.11 poise	0.09 poise	0.09 poise

The results of stability study of the final formulation reveal that in F3 rasayan kvatha no changes were noticed in all the tested physicochemical parameter as well as turbidity/homogeneity during 24 hrs, 48 hrs and 72hrs. Whereas, F1 and F2 formulation shows changes in tested physicochemical parameters (Table-2).

Table 2: AST of Immunity Boosting Rasayan Kvatha

Hours	24hrs			48hrs			72hrs		
Formulation	F1	F2	F3	F1	F2	F3	F1	F2	F3
Temperature	4^0C	RT	47^0C	4^0C	RT	47^0C	4^0C	RT	47^0C
Color	UC	UC	UC	C	C	UC	C	C	UC
Odor	UC	UC	UC	UC	UC	UC	C	C	UC
Taste	UC	UC	UC	C	UC	UC	C	C	UC
pH	4.9	4.7	4.5	4.9	4.7	4.5	6.5	6.2	4.5
Specific Gravity (g/ml)	1.1760	1.1570	1.1460	1.1760	1.1570	1.1460	1.2160	1.1960	1.1460

UC- Unchange; C- Change

Table 3: Antimicrobial Studies of Immunity Boosting Rasayan Kvatha

Microorganism	Zone of Inhibition (mm)	
	Rasayan kvatha (F3)	Standard
Bacillus subtilis	18	14
Staphylococcus aureus	16	21

Preliminary antimicrobial activity screening tests observations were shown in Table 3. Rasayan

kvatha formulation proved to be beneficial with excellent activity against all the tested microorganisms.

CONCLUSION

This preliminary *in-vitro* study demonstrated that immunity boosting rasayan kvatha was effective against pathogenic bacteria. From the result we can say that the rasyan kvatha is good in appearance, stable and acceptable. On basis of results we can further conclude that present formulation may be effective against various respiratory pathogenic microbes like available formulation in market. No doubts further research like toxicity study and supporting preclinical trials for immunity boosting required claiming present work in market. But in researcher in this field use this work as a primary step in this direction.

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