Clinical Study of a Unani Formulation 'Sharbat Zoofa Murakkab' in the Management of Sual Ratab (Productive Cough)

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Abstract

The objective of the study was to evaluate the efficacy and safety of a Unani formulation Sharbat Zoofa Murakkab in the management of Sual Ratab (productive cough). 'Sharbat Zoofa Murakkab' in a dose of 10 ml, thrice daily was administered orally to the patients for 14 days. The Mean ± S.E.M. scores of signs and symptoms of Sual Ratab (productive cough) i.e. frequency, intensity, quantity, sore throat, hoarseness of voice and chest tightness were found decreased by 44.0% ($p<0.001$), 53.62% ($p<0.001$), 23.96% ($p<0.001$), 39.89% ($p<0.001$), 49.42% ($p<0.001$) and 58.09% ($p<0.001$) respectively as compared to in baseline findings. After treatment, the variation in biochemical parameters of Liver and Kidney Function Tests were found non-significant. No adverse effect was found in the patients. 'Sharbat Zoofa Murakkab' was found effective and safe in the treatment of Sual Ratab (productive cough).

Keywords: Sharbat Zoofa Murakkab, Sual Ratab, Unani formulation.

Introduction

Cough is a physiologically useful protective reflex that clears the respiratory tract by removing accumulated mucus and foreign substances (Sharma *et al*., 2011; Brunton et al., 2007). It occurs due to stimulation of chemo receptors in throat, respiratory passages or stretch receptors in the lungs (Tripathi, 2007). Traditionally cough is classified as either productive *(*producing mucus usually with expectoration) or non-productive (dry) (Harvey et al., 2008). Productive coughs are treated by the expectorants that enhance the bronchial secretion or reduce the viscosity of phlegm to facilitate its removal by coughing (Canning *et al*., 2004). It should be suppressed only when it is exhausting the patient or is dangerous (Karisson, 1996).

According to Unani Scholar Ibn Sina, sual (cough) is an act by which tabiyat removes aziyat (irritating substances) from the lungs and adjacent structures (Kantoori, 2007). Ismail Jurjani has described that Sual is movement of lungs to remove or reduce the painful stress on the lungs (Khan, 1903), it eliminates the irritating substances from the lungs and its associated structures (Kirmani, 1926). Most of the Unani scholars, while describing the pathogenesis of the disease have mentioned Asbabe badiyah (extrinsic factors) i.e. smoke, dust, fumes cold air and Asbabe wasila (intrinsic factors) i.e. sue mizaj as causative factors of cough. Asbabe badiyah cause inflammation in the airways and produces ratoobat (mucus hyper-secretion) that result in narrowing of the airways. According to them, cough is produced due to narrowing of the airways caused

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by accumulation of secretion (Khan, 1903; Ibn Sina, 2007; Tabri 1997) and is more prevalent in the persons of balghami mizaj (phlegamatic temperament) (Ibn Sina, 2007; Khan, 1903; Arzani, 2002). Some Unani scholars have described that Sue-mizaj ratab of lungs produce cough (Ibn Sina, 2007; Arzani, 2002, Khan, 2003). According to the nature of the cause, Sual har maddi (cough of hot humours) and Sual barid maddi (cough of cold humours) are collectively known as Sual Ratab (Productive Cough) (Khan, 1903). Sual Ratab (Productive cough) is caused by the fluids (Ratubat) of lungs and Chest. It is mainly found in elderly people and the people with wet temperament. The symptoms are amount of discharge are excessive, hoarseness of voice are present during the sleep and after awaking (Arzani, 1903)

Since the drugs available in modern medicine produce varying adverse effects in the human body, therefore natural, herbal or traditional medicines including Unani medicine are now being seen by the people with an eye of great interest and hope. Unani medicine claims to possess effective treatment for the management of sual and suggest an array of medicament for the purpose. Shabali 2 of Murakkab is one of the important drugs used to improve the condition of wet cough and other respiratory diseases (Arzani, 2002; Khan, 2003). Therefore, present study has been designed to study the efficacy and safety of Sharbat-Zoofa Murakkab in patients of Bronchial cough.

Material and Methods

Study Drug

The study drug 'Sharbat Zoofa Murakkab' is a Unani pharmacopoeial formulation, having 9 single drugs of plant origin (Table 1). The drug was manufactured by Central Research Institute of Unani Medicine, Hyderabad, and supplied to the Regional Research Institute of Unani Medicine, Patna.

Place of the Study

An open level clinical study, approved by the Institutional Ethics Committee (IEC), was carried- out on the patients of Sual Ratab (productive cough) in the O.P.D. of Regional Research Institute of Unani Medicine, Patna, for two years from 2012 to 2014.

Selection of Patients

The screened patients presenting one or more symptoms of productive cough, who met the inclusion and exclusion criteria of the study, were selected for this

study. Diagnosis of each case was made with the help of detailed history of selected patients, physical and systemic examinations as well as the laboratory investigations.

Inclusion Criteria

- Patients of either sex in the age group of 18-65 years.
- Cases of cough with the expectoration.
- Complaints of cough with history of more than 3 days duration.
- Patients willing to sign informed consent form to participate in the study.
- Patients willing to comply with various demands of study.

Exclusion Criteria

- Cases of non-productive cough.
- Cases of concomitant disease that may affect the evaluation of response to protocol therapy (such as Pneumonia, Bronchiectasis, Bronchial Asthma, pulmonary tuberculosis and lung carcinoma)
- Known cases of renal / hepatic/ cardiac impairment or the ailments needing long term therapy.
- Diabetes mellitus excluded by taking the history and blood sugar fasting examination.
- Pregnant or lactating women.

Treatment of Patients

All selected patients as per the inclusion/exclusion criteria were treated with Sharbat- Zoofa-Murakkab in the dose of 10 ml with lukewarm water thrice daily for 14 days.

Clinical Evaluation

The effects of Sharbat Zoofa Murakkab were assessed on subjective and objective parameters of the productive cough. Subjective parameters included, sore throat, hoarseness of voice and chest tightness; frequency and intensity of cough. As, these clinical parameters differ in severity (such as absent, mild, moderate or severe) from patient to patient therefore severity of the clinical parameters were graded as absent=0, mild=1, moderate=2 and severe=3 for appropriate assessment and statistical evaluation of the efficacy of Unani compound formulation. The patients were followed up on 7^{th} and 14^{th} day and at every visit, they were clinically examined and asked about the improvement or worsening of their symptoms.

Safety Assessment

The safety was assessed by monitoring adverse events when reported by the patients or elicited by the investigator by clinical as well as laboratory investigations before and after the treatment. The laboratory tests included Hematological Test (Hb, TLC, DLC, ESR), Liver Function Test (serum bilirubin, SGOT, SGPT, alkaline phosphatase) and Kidney Function Test (blood urea, serum creatinine).

Statistical Analysis

All data were statistically analyzed by applying paired't' test to evaluate the efficacy and safety of the drugs. Probability level of less than 5% was considered as statistically significant.

Results

A total of 109 subjects with signs and symptoms of Sual ratab (productive cough) completed the study. Means age of the patients was found to be 32.87 years. The distribution of the characteristics / demographic data of the selected patients for the study is summarized in table 2.

Effects of Sharbat-Zoofa Murakkab on Clinic Parameters

After 14 days treatment with Sharbat Zoofa Murakkab, the clinical parameters of productive cough i.e. sore throat, hoarseness of voice, chest tightness, frequency, intensity and quantity decreased significantly by 39.89%, 49.42%,

Table 1: Composition of 'Sharbat Zoofa Murakkab' (Kabiruddin, 1935)

Constituents	Latin name	Parts used	Quantity
Injeer	*Ficus carica* Linn.	Fruit	10 pieces
Tukhm-e-Khatmi	*Althaea officinalis* Linn	Seed	10 gm
Aslus Soos	*Glycyrrhiza glabra* Linn.	Root	10 gm
Irsa	*Iris ensata* Linn.	Root	10 gm
Badian	*Foeniculum vulgare* Mill	Fruit	15 gm
Tukhm-e-Karafs	*Apium graveolens* Linn	Seed	15 gm
Persiao Shan	*Adiantum capillus-vereris* Linn.	Whole Plant	20 gm
Zoofa Khushk	*Hyssopus officinalis* Linn.	Whole plant	20 gm
Muveez Munaqqa	*Vitis vinifera* Linn.	Fruit	90 gm

Table 2: Effect of Sharbat Zoofa Murakkab, on clinical parameters of Sual-Ratab (productive cough).

Presenting Symptoms		Mean ± SEM	Percentage Decrease	t-value	df	p-value
Sore Throat	BT	1.83 ± 0.05	39.89	11.581	108	<0.001
	AT	1.10 ± 0.06				
Hoarseness of Voice	BT	1.72 ± 0.06	49.42	11.788	108	<0.001
	AT	0.87± 0.06				
Chest Tightness	BT	1.36 ± 0.07	58.09	10.688	108	<0.001
	AT	0.57 ± 0.06				
Presenting Signs		Mean ± SEM	Percentage Decrease	t-value	df	p-value
Frequency	BT	2.50 ± 0.05	44.00	16.911	108	<0.001
	AT	1.40 ± 0.06				
Intensity	BT	2.07 ± 0.06	53.62	15.723	108	<0.001
	AT	0.96 ± 0.06				
Quantity	BT	2.17 ± 0.05	23.96	7.7880	108	<0.001
	AT	1.65 ± 0.06				

Paired 't' test, $p<0.001$ (Highly significant), $p<0.05$ (Significant), n=109

58.09%, 44.0%, 53.2% and 23.96%, respectively as compared to baseline findings (Table 2).

Effects of Sharbat-Zoofa Murakkab on Safety Parameters

The effect of test drug on haematological parameters (HB, ESR, TLC and eosinophils) and Biochemical parameters (Liver Function Test parameters and Kidney Function Test parameters), as assessed by laboratory investigations are depicted in table 5 and table 6, respectively.

After completion of treatment, erythrocyte sedimentation rate (ESR), total leukocyte count (TLC) and eosinophils were found decreased by 38.68% ($p<0.001$), 1.73% ($p>0.05$) and 54.29% ($p<0.001$) respectively. Heamoglobin was found significantly increased by 2.74 % ($p<0.001$) as compared to baseline value (Table 5).

Biochemical parameters of the Liver Function Test and Kidney Function Test were found within the normal range. After treatment percentage difference in Biochemical parameters as compared to baseline were found non-significant (Table 3 & 4).

Table 3: Effect of Sarbat Zoofa Murakkab on the Haemological Parameters.

Pathological Tests			Mean± S.E.M.	Percentage Increase(↑)/ Decrease(↓)		t- value	df	'p' value
Hemoglobin (gm/dL)		BT	11.66±0.08	2.02	↑	-3.48	108	P<0.001
		AT	11.90±0.11					
ESR (mm/hr)		BT	16.57±1.20	38.68	↓	6.884	108	p<0.001
		AT	10.16 ±0.91					
Total Leukocyte count 1000/cu.mm		BT	6.34 ± 0.14	1.73	↓	0.770	108	P=0.440
		AT	6.23 ± 0.07					
Differential Leukocyte Count								
DLC	Polymorphs (%)	BT	58.47 ±0.60	1.83	↓	1.475	108	p>0.05
		AT	57.40 +0.39					
	Lymphocytes (%)	BT	33.53 ±0.60	9.60	↑	-5.331	108	p<0.001
		AT	37.09 ±0.32					
	Monocytes (%)	BT	0.93 ± 0.07	52.77	↑	-3.89	108	p<0.001
		AT	1.96 ± 0.27					
	Eosinophils (%)	BT	6.69 ± 0.31	54.29	↓	12.686	108	p>0.001
		AT	3.06 ± 0.15					

Paired 't' test, n=109, p <0.001 Highly Significant (H.S.), p>0.05 Non-Significant (N.S.)

During the study neither the adverse effect was reported by the patients nor it was detected during clinical examination and laboratory investigation.

Discussion

The study demonstrated that Sharbat-Zoofa Murakkab is effective in relieving the productive cough as it caused significant decreaase in almost all the signs and symptoms of cough.

After two weeks of the treatment with Sharbat Zoofa Murakkab, improvement was recorded in sore throat (39.89%), hoarseness of voice (49.42%), chest tightness (58.09%), frequency (44.0%), intensity (53.62%) and quantity of sputum (23.96%). The ingredients contained in Sharbat Zoofa Murakkab have been ascribed to possess some of the pharmacological effects which are effective directly or indirectly in improving the cough and expectoration. Irsa, Persiosham, Badian and Tukhme Karafs etc. have been described to be anti-inflammatory, Asl-us-Soos and Persioshan are expectorant and Gule Zoofa, Tukhme Khatmi

Table 4: Effect of the Sharbat Zoofa Murakkab on Liver and Kidney function.

Laboratory Tests	Parameters	Day of Measurements	Mean ± S.E.M.	Percentage Reduction	p value
Liver Function Tests	Serum Bilirubin, (mg/dL)	Baseline	0.72 ±0.05	6.94 %	>0.05*
		After Treatment	0.67 ± 0.01		
	SGOT (IU/L)	Baseline	15.63 ±0.33	3.01 %	>0.05*
		After Treatment	15.16 ±0.36		
	SGPT (IU/L)	Baseline	21.90 ±0.56	0.59 %	>0.05*
		After Treatment	21.77 ±0.40		
	ALP (KAU/dl)	Baseline	6.99 ± 0.49	0.72 %	>0.05*
		After Treatment	6.94 ± 0.45		
Kidney Function Tests	Blood Urea (mg/dL)	Baseline	23.05 ±0.39	0.95 %	>0.05*
		After Treatment	22.83 ±0.37		
	Serum Creatinine (mg/dL)	Baseline	0.80 ± 0.05	0.03 %	>0.05*
		After Treatment	0.78 ± 0.01		

*p>0.05 (Non-significant); **p<0.05 (Significant), (Statistical analysis by paired't' test), n=109.

and Asl-us-Soos have mucolytic property. Due to anti-inflammatory, expectorant and mucolytic properties of the ingredients of Sharbat Zoofa Murakkab, appears to control the inflammation in respiratory track and modify the consistency of the mucous to enable it to be expectorated easily. The collective response of various ingredients actually translated into the improvement of production cough.

At the end of the study, ESR, which indirectly measures inflammation, was decreased. Percentage reduction in ESR (38.68%) and Eosinophil (54.26%) were found highly significant. They indicated that the test drug also possesses anti-allergic response. Increase in heamoglobin (2.74%) as compared to baseline were found highly significant (p<0.001). (Table 5). Biochemical parameters of liver function test, kidney function test (Serum Bilirubin, SGOT, SGPT, Alk. phosphatase) and kidney function (Blood Urea, S.Creatinine) were found within the normal range indicating that the test drug is safe.

Conclusion

On the basis of above observations, it can be concluded that Sharbat Zoofa Murakkab is clinically effective and safe in relieving the symptoms and signs of

sual ratab (productive cough) and hence it can be safely prescribed to the patients.

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