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### Review Article

## EFFECT OF AYUASMO CAPSULES (AYURVEDIC FORMULATION) IN THE MANAGEMENT OF TAMAKA SAWASA (BRONCHIAL ASTHMA) BY ASSESSMENT OF PULMONARY FUNCTION TESTS: A SINGLE CASE STUDY

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### ABSTRACT

**Introduction:** - Bronchial Asthma is a Chronic Obstructive Pulmonary Disease affecting a large population across the world. In ayurveda, bronchial asthma can be classified under *Sawasa Roga*. *Tamaka Sawasa* is a subtype of *Sawasa* described as an independent disease having its own *Nidan* (etiology), *Samprapti* (pathophysiology), and *Chikitsa* (management). **Main Clinical Findings-** A female patient aged 37 years with a history of *Tamaka Sawasa* (bronchial asthma) for the last 7 years. The chief complaints of the patient were cough and dyspnoea since last 7 years. Assessment of Pulmonary Function Test through Spirometer at baseline was FEV1 of 50%. **Diagnosis:** - Bronchial Asthma. **Interventions:** - Ayuasmo capsule (Ayurvedic Formulation) - a combination of 14 ingredients (*Vasa*, *Kantakari* etc). Ayuasmo Capsules was administered in a dose of 2 Capsules twice a day for 3 months. No other medicine was being taken or given other than the above-mentioned protocol. **Outcome:** - Along with clinical improvement in symptoms of dyspnoea, wheezing, significant improvement was also observed in the lung capacity (FEV1 50% at baseline to FEV1 90% at the end of 3 months). **Conclusion:** Ayuasmo can be considered as an effective medication in the management of Bronchial Asthma.

**Keyword:** - Ayuasmo, *Tamaka Swasa*, FEV1

## Case report

### Introduction

In modern times, the prevalence of respiratory diseases has increased dramatically due to a combination of lifestyle factors and environmental pollution.<sup>[1]</sup> Management of this condition is done with the use of Bronchodilators, anti-inflammatory and also corticosteroids in modern medicine. Ayurveda recommends the use of various herbs and formulations that have been proven to be scientifically useful in the management of Bronchial Asthma (*Tamak Swasa*).

A 37-year-old female came to O.P.D. of NIA Jaipur, India on September 28, 2018 (screening visit). The chief complaints of the patient were cough and dyspnoea since last 7 years. Auscultation of chest wheezing was present bilaterally. The patient had history of Bronchial Asthma since 7 years and was taking treatment for the same on and off. Written informed consent was taken from the patient. All laboratory related parameters including CBC, LFT, RFT, Lipid Profile, Urine (Routine and Microscopic) were within normal limits. Spirometry examination showed FEV1% as 50% (moderate case of asthma).

Subject was recruited in the study and was asked to take Ayuasmo capsules in a dose of 2 Capsules twice a day for 3 months. Subject was regularly followed up every 15 days when clinical examination was done. At the interval of every 30 days assessment was also done on Spirometer for changes in the lung capacity. At the end of the study all the laboratory parameters checked at baseline were assessed.

### Drug:

Ayuasmo (Ayurvedic Formulation) capsule is a combination of 14 ingredients which have been used in Ayurveda in the management of various types of respiratory diseases. Ayuasmo capsules support the respiratory system and strengthen the lungs' and bronchial tubes' fragile tissues.

Ingredients: *Vasa*<sup>[2]</sup> Extract{*Adhatoda vasica*} (50mg), *Yastimadhu*<sup>[3]</sup> Extract{*Glycyrrhiza glabra*} (50mg), *Kulanjan*<sup>[4]</sup> Extract{*Alpinia galangal*} (30 mg), *Puskaramula*<sup>[5],[6]</sup> Extract{*Inula racemosa*} (30 mg), *Aamalaki*<sup>[7],[8]</sup> Extract{*Phyllanthus emblica*} (30 mg), *Katphala*<sup>[9]</sup> Extract{*Myrica Nagi*}(30mg), *Bala*<sup>[10]</sup> Extract {*Sida cordifolia*} (30mg), *Bharangi*<sup>[11]</sup> Extract {*Clerodendrum indicum*} (25 mg), *Shati*<sup>[12]</sup> Extract{*Hedychium spicatum*} (25mg), *Karkatashringi*<sup>[13]</sup> Extract{*Pistacia integerrima*} (25 mg), *Kutki*<sup>[14]</sup> Extract {*Picrorrhiza kurroa*} (20mg), *Shunthi*<sup>[15]</sup> Extract {*Zingiber officinale*} (20mg), *Tulsi*<sup>[16],[17]</sup> Extract{*Occimum sanctum*} (15mg), *Talispatra*<sup>[18]</sup> Extract {*Abies webbiana*} (10mg).

Indications: 1. Bronchial asthma 2. Cold, Cough 3. Rhinitis 4. Bronchitis 5. Sinusitis

Dosage: 2 Capsules twice a day with warm water for 3 months.

**Results:**

Assessment of effect of consumption of Ayuasmo Capsules was done on both clinical parameters and also through Pulmonary Function tests (Spirometry).

**i) Assessment of FEV1 over a period of 90 days:**

FEV1 is the amount of air, which can be forcibly exhaled from the lungs in the first second of a forced exhalation.

At Day 0 (Baseline visit) FEV1 predicted at day 0 (2.2 L), best effort by patient (1.1 L), % Prediction (50%) signifying moderate case of asthma. At Day 30 there was a significant improvement where the FEV1 predicted was (2.2 L) best effort by patient (1.8 L) % Prediction (81%). At Day 60 further improvement was observed with FEV1 predicted at day 60 (1.8 L) best effort by patient (1.59 L) % Prediction (70%) signifying moderate case of asthma. At the end of the study i.e. Day 90, FEV1 predicted was (2.2 L) best effort by patient (2.04 L) % prediction (90%) signifying only mild Asthma. Refer Table 1.1.

**ii) Assessment of FVC over a period of 90 days.**

**FVC** Forced vital capacity (L) the amount of air that can be forcibly exhaled from your lungs after taking the deepest breath.

At Day 0 (Baseline visit) FVC predicted at day 0 (2.84 L) best effort by patient (1.83 L) % Prediction (64%). At the end of day 30 significant improvement was observed with FVC predicted at day 30 (2.84 L) best effort by patient (2.72 L) % prediction (96 %). Further at day 60 improvement continued with FVC predicted at day 60 (2.84 L) best effort by patient (2.27 L) % Prediction (80 %). At the end of the study i.e. day 90 was much better than Day 0 FVC predicted At day 60 (2.84 L) best effort by patient (2.81 L) % prediction (99 %). Refer table 1.2 for details.

**iii) Assessment of FEV1/FVC over a period of 90 days**

The FEV1/FVC ratio, also called Tiffeneau - Pinelli index, is a calculated ratio used in the diagnosis of obstructive and restrictive lung disease. Acc. to GINA (Global Initiative For Chronic Obstructive Lung Disease) Post-bronchodilator FEV1/FVC ratio less than 0.70 should be used to indicate the presence of airway obstruction and this is applied to individuals of all ages, genders, heights and ethnicities.

Results of FEV1/FVC are as follows:

- Day 0 the FEV1/FVC ratio % Prediction is 77%.
- Day 30 the FEV1/ FVC ratio % Prediction is 85%.
- Day 60 the FEV1/ FVC ratio % Prediction is 90%.
- Day 90 the FEV1/ FVC ratio % Prediction is 92%.

**iv) Assessment of FEF 25-75 over a period of 90 days:**

Forced expiratory flow over the middle one half of the FVC; the average flow from the point at which 25 percent of the FVC has been exhaled to the point at which 75 percent of the FVC has been exhaled.

Results of FEF 25-75 are as follows:

- Baseline Visit (Day 0): - % Prediction 24%.
- Day 30: - % Prediction 48% (Significant improvement over baseline)
- Day 60: - % Prediction 45% (Significant improvement over baseline)
- Day 90: - % Prediction 54% (Significant improvement over baseline)

**v) Assessment of ACQ (Asthma Control Questionnaire) over a period of 90 days:**

The ACQ is able to identify the adequacy of asthma control in individual patient. In general, subjects with a score below 1.0 have adequately controlled asthma and above 1.0 their asthma was not well controlled. It was done on every visit.

- Baseline (Day 0) the total score was 1.85 (uncontrolled Asthma)
- Day 30 the total score - 0.28 (adequately control of asthma).
- Day 60 the total score - 0.42 (adequately control of asthma).
- Day 90 the total score - 0.14 (adequately control of asthma).

**vi) Assessment of cough in daytime and nighttime:**

Assessment of daytime and nighttime cough was done on the basis of subject reported diary. The diary captured episodes, their severity and duration. There was a gradual reduction in cough from baseline to the end of 90 days at which there was no daytime and nighttime cough.

**vii) Assessment of Laboratory related parameters:**

Laboratory parameters like CBC, Liver function tests, Renal function tests, Lipid profile were observed to be within normal range both at baseline and at the end of the study. There was no significant change on these parameters.

**Discussion & Conclusion:**

Bronchial Asthma requires continuous care through the use of bronchodilators and also corticosteroids. Though these medications are found to be effective they have potential side effects. The present study showed that Ayuasmo capsules was effective when used in a dose of 2 Capsules twice a day in a female patient suffering from Bronchial Asthma. Vital lung function tests like FEV1, FVC showed significant improvement over a period of 90 days of the study.

AyuAsmo capsules contains ingredients like *Vasa*, *Kulanjan*, *Puskaramula* which are anti-inflammatory and bronchodilator, *Yastimadhu* is a known mucolytic that helps to expel sputum, *Bharangi*, *Shati*, *Karkatashringi* have strong anti-histaminic action that help to prevent allergic reactions commonly observed in bronchial Asthma. *Bala* and *Amalaki* are proven anti-oxidants that help to prevent long term damage to the lung tissue.

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**TABLE 1 SPIROMETERY ASSESMENT**

<b>(TABLE NO 1.1) ASSESSMENT OF FEV1 MONTH WISE</b>			
<b>VISIT SCHEDULE</b>	<b>PREDICTION</b>	<b>BEST</b>	<b>% PREDICTION</b>
<b>BASELINE VISIT</b>	2.22	1.1	50%
<b>DAY 30</b>	2.22	1.8	81%
<b>Day 60</b>	2.22	1.59	70%
<b>Day 90</b>	2.22	2.04	90%
<b>(Table No1.2) Assessment of FVC Month wise</b>			
<b>Visit Schedule</b>	<b>Prediction</b>	<b>Best</b>	<b>% Prediction</b>
<b>Baseline Visit</b>	2.84	1.83	64%
<b>Day 30</b>	2.84	2.72	96%
<b>Day 60</b>	2.84	2.27	80%
<b>Day 90</b>	2.84	2.81	99%
<b>(Table No 1.3) Assessment of FEV1/FVC Month wise</b>			
<b>Visit Schedule</b>	<b>Prediction</b>	<b>Best</b>	<b>% Prediction</b>
<b>Baseline Visit</b>	78.17	60.11	77%
<b>Day 30</b>	78.17	66.18	85%
<b>Day 60</b>	78.17	70.04	90%
<b>Day 90</b>	78.17	72.6	92%
<b>(Table No 1.4) Assessment of FEF 25-75 (L/S) Month wise</b>			
<b>Visit Schedule</b>	<b>Prediction</b>	<b>Best</b>	<b>% Prediction</b>
<b>Baseline Visit</b>	2.92	0.69	24%
<b>Day 30</b>	2.92	1.4	48%
<b>Day 60</b>	2.92	1.3	45%
<b>Day 90</b>	2.92	1.57	54%

**Table 2 Dairy Card Assessment**

<b>(Table No 2.1) Assessment of ACQ (Asthma Control Questionnaire) Month wise</b>	
<b>Visit Schedule</b>	<b>Best</b>
<b>Baseline Visit</b>	1.85
<b>Day 30</b>	0.28

<b>Day 60</b>	0.42	
<b>Day 90</b>	0.14	
<b>(Table no 2.2) Assessment of cough in day time and Severity</b>		
<b>Visit</b>	<b>Cough (Day time)</b>	<b>Severity</b>
<b>Day 15</b>	11	Mild
<b>Day 30</b>	20	Mild
<b>Day 45</b>	11	Mild
<b>Day 60</b>	0	No
<b>Day 75</b>	0	No
<b>Day 90</b>	0	No
<b>(Table no. 2.3) Assessment of Cough At night time and severity</b>		
<b>Visit</b>	<b>Cough (Night time)</b>	
<b>Day 15</b>	0	
<b>Day 30</b>	0	
<b>Day 45</b>	0	
<b>Day 60</b>	0	
<b>Day 75</b>	0	
<b>Day 90</b>	0	

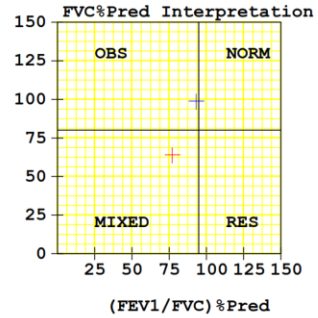
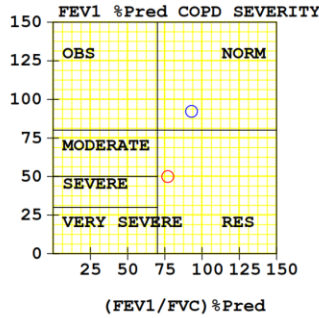
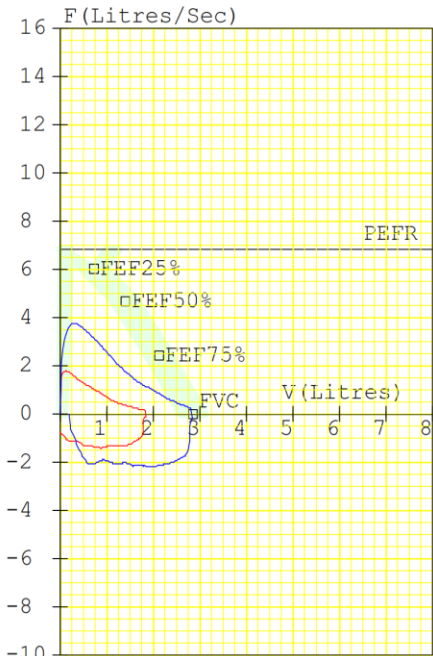
**Table 3 Laboratory parameter**

<b>(Table no 3.1) Assessment of Hematology</b>		
<b>Hematology</b>	<b>BT</b>	<b>AT</b>
<b>RBC</b>	4.41	4.3
<b>WBC</b>	7100	9000
<b>HB</b>	13.4	12.4
<b>Platelets</b>	1.89	2.5
<b>ESR</b>	4	25
<b>(Table no 3.2) Assessment of Renal Function test</b>		
<b>RFT</b>	<b>BT</b>	<b>AT</b>
<b>Sr. Creatinine</b>	1	0.7
<b>BUN</b>	13.95	15.16
<b>(Table no. 3.3) Assessment of Liver function test</b>		
<b>LFT</b>	<b>BT</b>	<b>AT</b>

<b>T Bilurubin</b>	0.8	0.4
<b>AST</b>	24	26.3
<b>ALT</b>	24	26.3
<b>ALP</b>	198	166.3
<b>Total Protien</b>	6.2	7.9
<b>A/G Ratio</b>	1.5:1	1
<b>(Table no. 3.4) Assessment of Lipid Profile</b>		
<b>Lipid Profile</b>	<b>BT</b>	<b>AT</b>
<b>Total Cholestrol</b>	190	184.3
<b>Triglycride</b>	148	95.1
<b>LDL</b>	113.4	116
<b>HDL</b>	47	49.3
<b>VLDL</b>	29.6	19
<b>(Table no. 3.5) Assessment of Blood sugar (Fasting)</b>		
<b>Blood Sugar</b>	<b>BT</b>	<b>AT</b>
<b>Fasting</b>	95	82
<b>Table no 3.6) Assessment of urine examination</b>		
<b>Urine Examination</b>	<b>BT</b>	<b>AT</b>
Protien	Trace	Absent
Glucose	Nil	Absent
Ketone	-	Absent

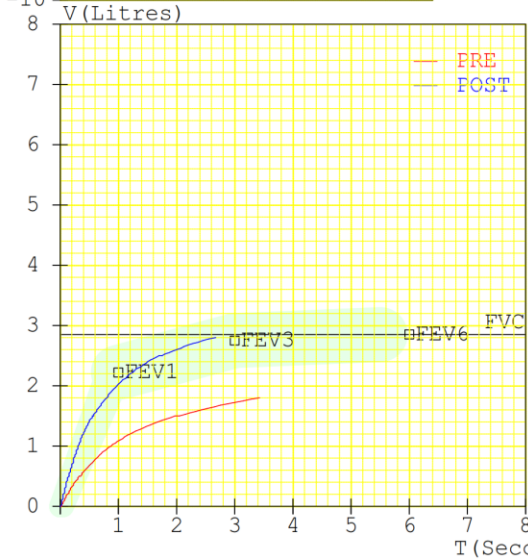


# Report



### Spirometry (FVC Results)

Parameter	Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC (L)	02.84	01.83	064	02.81	099	+54
FEV1 (L)	02.22	01.10	050	02.04	092	+85
FEV1/FVC (%)	78.17	60.11	077	72.60	093	+21
FEF25-75 (L/s)	02.92	00.69	024	01.57	054	+128
PEFR (L/s)	06.82	01.77	026	03.74	055	+111
FIVC (L)	-----	02.01	---	02.65	---	+32
FEV. 5 (L)	-----	00.71	---	01.41	---	+99
FEV3 (L)	02.76	01.75	063	02.81	102	+61
PIFR (L/s)	-----	01.40	---	02.18	---	+56
FEF75-85 (L/s)	-----	00.31	---	00.68	---	+119
FEF. 2-1.2 (L/s)	05.28	00.92	017	02.96	056	+222
FEF 25% (L/s)	06.02	01.31	022	03.14	052	+140
FEF 50% (L/s)	04.67	00.80	017	01.73	037	+116
FEF 75% (L/s)	02.42	00.38	016	00.84	035	+121
FEV. 5/FVC (%)	-----	38.80	---	50.18	---	+29
FEV3/FVC (%)	97.18	95.63	098	100.00	103	+05
FET (Sec)	-----	03.54	---	02.67	---	---
ExpTime (Sec)	-----	00.09	---	00.08	---	---
Lung Age (Yrs)	038	057	150	041	108	-28
FEV6 (L)	02.84	-----	---	-----	---	---
FIF25% (L/s)	-----	01.29	---	02.02	---	+57
FIF50% (L/s)	-----	01.29	---	02.09	---	+62
FIF75% (L/s)	-----	01.07	---	01.94	---	+81



### Pre Test COPD Severity

Restrictive stage COPD as FEV1/FVC  $\geq$  70% and FEV1 < 80%

### Post Test COPD Severity

Test within normal limits

### Pre Medication Report Indicates

Early Small Airway Obstruction as FEF 25-75 %Pred or PEFR %Pred < 70

Mixed Blockage as (FEV1/FVC)%Pred < 95 and FVC%Pred < 80

### Post Medication Report Indicates

Early Small Airway Obstruction as FEF 25-75 %Pred or PEFR %Pred < 70

Mild Obstruction as (FEV1/FVC)%pred < 95 and FVC%Pred > 80

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