



## COMPARATIVE STUDY ON SAFETY EFFICACY AND ASSOCIATED OUTCOMES OF SACUBITRILVALSARTAN AND RAMIPRIL IN HEART FAILURE

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### ARTICLE INFO

### ABSTRACT

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Tuberculosis (TB) is a leading infectious killer despite the reduction of new infections. India recorded a rise in the number of cases recently. Though there is a reduced rate of multi-drug resistant TB cases, it is a serious threat. Fluoroquinolones are the class of second-line drugs used in the treatment of MDR-TB. Development of resistance towards fluoroquinolones has been observed. All these facts indicate the necessity of the research for the discovery of new leads. Because thienopyrimidines are the bioisosteres of fluoroquinolones, in the current research work, various derivatives of Thieno [2, 3-d] pyrimidines are synthesized and screened against *Mycobacterium tuberculosis*. The syntheses of 4-(4-oxothieno [2,3-d]pyrimidin-3(4H)-yl)methylamino)-N-substituted-phenylbenzenesulfonamide 6(a-j) was done and spectra confirmed the formation of the final compounds. Six compounds (6a, 6b, 6e, 6f, 6i, 6j) were screened against *M. tuberculosis* H<sub>37</sub>Rv at 100 µg/ml. All six compounds exhibited moderate inhibitory activity. Newly synthesized compounds can serve as lead for better antitubercular compounds.

### INTRODUCTION

The heart is a hollow muscular organ that is generally cone-shaped and around 10cm long, around the size of the owner's hand. When compared to women, men have a heavier heart (approximately 310 grams) (about 225 gm).

**Functions:** The following are the most significant functions of the heart) The hearts most significant duties include circulating oxygenated blood, hormones, and other critical substances throughout the body, controlling blood pressure, and receiving deoxygenated blood and other metabolic waste products from the body and pumping them to lungs for oxygenation

Heart failure is a gradual clinical illness in which the heart is unable to pump enough

Blood to scarry out the body metabolic activities. It can be caused by a variety of underlying disorders that cause a decrease in ventricular filling (diastolic dysfunction) or a decrease in myocardial contractility (systolic dysfunction), altering the contraction mechanism and lowering cardiac output and myocardial damage occurs as a result). In the early stages of heart failure, here compensatory systems attempt to maintain adequate cardiac output in response to myocardial injury. Increased sympathetic activity is one of the ways. RAAS activity has increased. Increased hypertrophy and remodeling of the myocardium) Both sides of the heart might be affected by heart failure.

Chronic heart failure is a frequent illness that affects 0.3 percent to 2% of the general population, 3-5 percent of those over 65, and 8-10 percent of those over 75, with HF accounting for 5% of all adult hospital admissions.

**Left-sided or left ventricular failure:** This happens when the pressure created by contracting myocardium in the left ventricle is less than the pressure created by the aorta, and the ventricle is unable to pump out all the blood it has received.

**Right sided cardiac failure:** When the pressure created by contracting myocardium inside the right ventricle is less than the force required to push blood through the lungs, the right ventricle fails.

**Congestive heart failure:** As blood flow out of the heart decreases, blood returning to the heart through veins corroborates, causing congestion in the tissues of the body and inflammation (edema). Swelling usually occurs mostly in feet and legs, but this can also occur in many other parts of the body as well.

**SIGNS AND SYMPTOMS:**

Dyspnea and weariness, Shortness of breath occurs on exertion, the lungs, ankles, and abdomen are all affected by edema, Micturition, Renal failure, Hepatomegaly.

**CAUSES:**

Coronary artery disease, Hypertension, Diabetes mellitus, Myocardial Infraction , Myocarditis ,cardiomyopathy, ventricular hypertrophy, valve stenosis, pericardial disease, Arrhythmias, Reduced kidney function are the most common causes of heart failure .

**DIAGNOSIS:** An echocardiography can detect pericardial, myocardial, or cardiac valve abnormalities, as well as quantify the left ventricular ejection fraction (LVEF) to see if systolic or diastolic dysfunction is present. On chest radiography or an ECG, ventricular hypertrophy can be seen. Pleural effusions or pulmonary edema may be visible on chest radiography.

Among the laboratory tests used to identify diseases that may cause Heart failure are: Complete blood count Urine analysis, Serum electrolytes (including calcium and

magnesium) renal hepatic and thyroid function tests Lipid profile Chest X –rays

**MATERIAL AND METHODS:**

For this study, consent of Institutional ethics committee, Durga Bhai Deshmukh hospital was taken. This prospective observational study was conducted for 6months in Department of cardiology, Durga Bhai Deshmukh hospital a 250 bedded multispecialty hospital. A study was conducted to evaluate patients with Heart Failure. Baseline demographic data was collected from the patient case reports. Patients presenting with Herat failure of either sex or with other co –morbidity are also included. Patients with age group of 30 -60 and more than 60 were included. Patients with age group of <30, Patients undergoing with surgery, Pregnancy and lactating women were excluded.

**RESULTS AND DISCUSSIONS:**

In the current clinical research investigation, we conducted a prospective observational study in the cardiology department to determine the efficacy, safety, and associated outcomes of ramipril and sacubitril-valsartan in the treatment of heart failure. This research is being carried out at Durga Bhai Deshmukh Hospital under the supervision of experienced doctors.

A six-month study on 100 individuals was conducted, and the results were evaluated. Each patient was observed on a regular basis, with medication charts, test results, and vitals examined dependent on how long they've been in the hospital or during outpatient visit. The data collected from each patient was entered into our data collection sheet, which was customized towards the study's requirements Using histograms and pie diagrams, the results are given below based on the study's goal.

**GENDER DISTRIBUTION:**

GENDER	Number of patients	Percentage
MALE	62	62%
FEMALE	38	38%

**NUMBER OF PATIENTS WITH CO- MORBIDITIES**

Comorbidity	Number Of Patients
Hypertension(Htn)	21
Diabetes Mellitus(Dm)	10
Renal Failure(Rf)	12
Htn+Dm	16
Htn+Dm+Rf	11

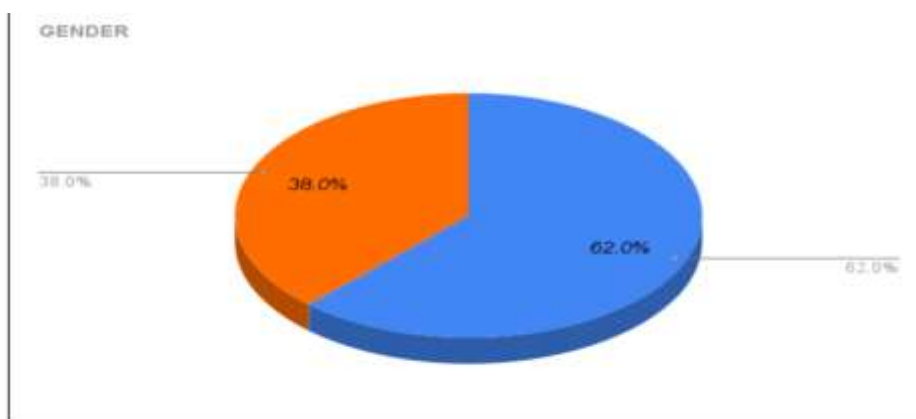
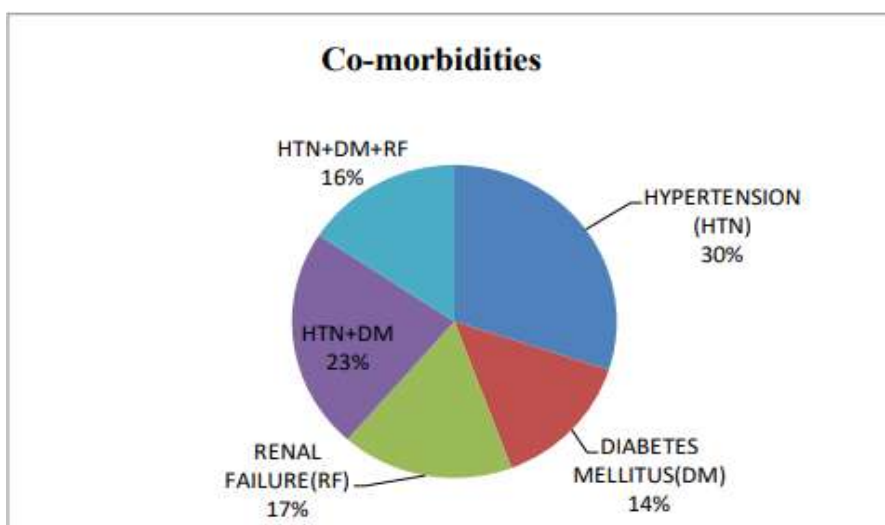


Fig 5.1: Percentage of collected subjects according to gender



**Report:** According to this table, 21(30%) are hypertensive patients, 10(14%) are diabetic patients, 12(17%) are renal failure patients, 16(23%) are hypertensive and diabetic patients, and 11(16%) are hypertensive, diabetic, and renal failure patients.

**Treatment Group:**

Drugs	Percentage
Ramipril	70%
Vymada	30%

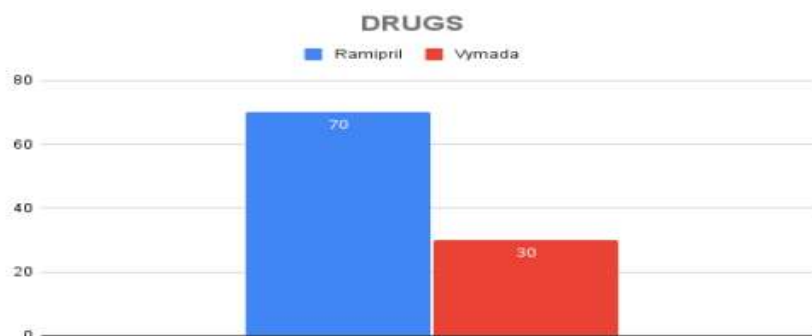


Fig 5.4 : Treatment Group

**Report:** Out of a total of 100 patients, 70 are given ramipril and 30 are given vymada.

**Distribution of Ramipril in Patients:**

Ramipril	Percentage
Male	67.14%
Female	32.85%

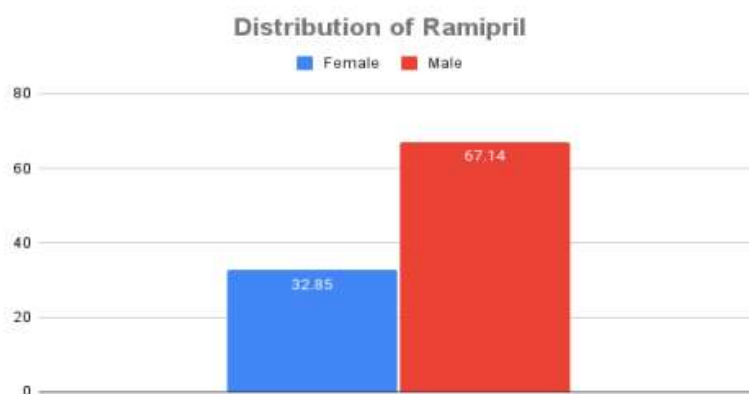


Fig 5.6 : Distribution of Ramipril in Patients

**Distribution of vymada in patients:**

Vymada	Percentage
Male	60%
Female	40%

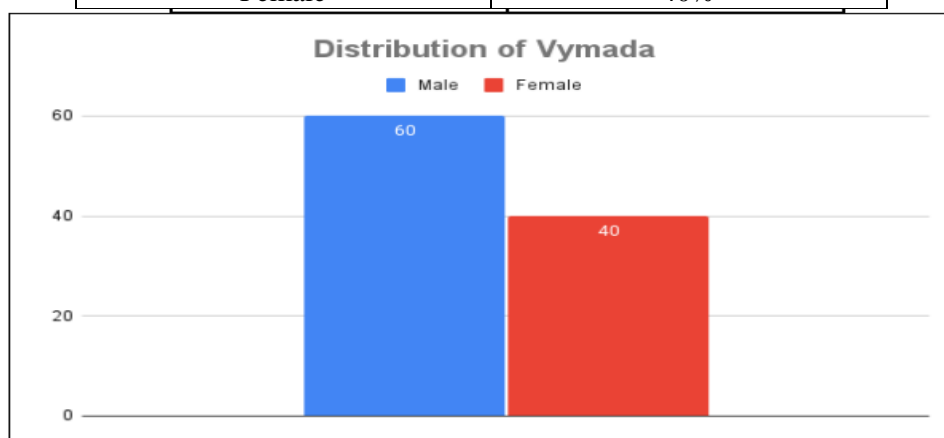


Fig 5.7 : Distribution Of Vymada In Patients

**INDUCED RAMIPRIL EFFECTS IN PATIENTS:**

S.no	Elevated Serum Creatinine	Hypotension	No of Patients	Percentage of patients
1	0.5-0.8	80-90	9	30%
2	0.9-1.2	90-100	12	40%
3	1.3-1.6	100-110	9	30%
4	1.7-2	110-120	0	0.00%

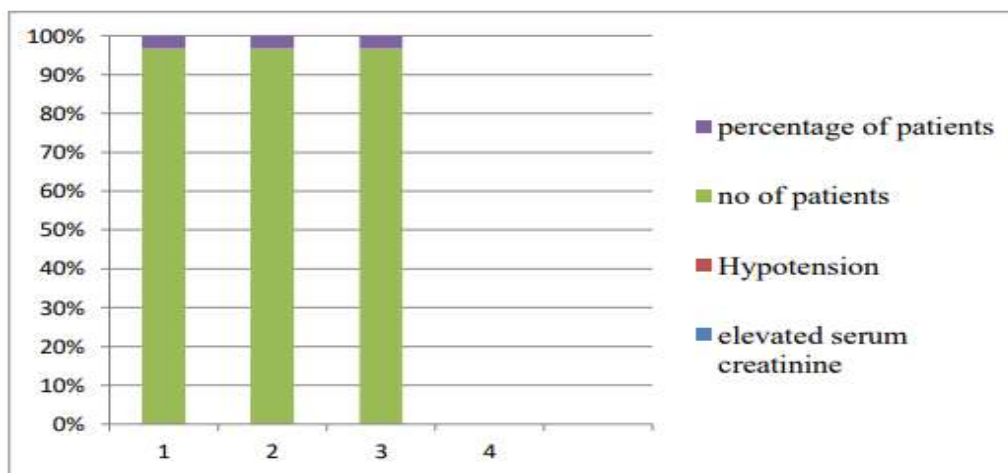
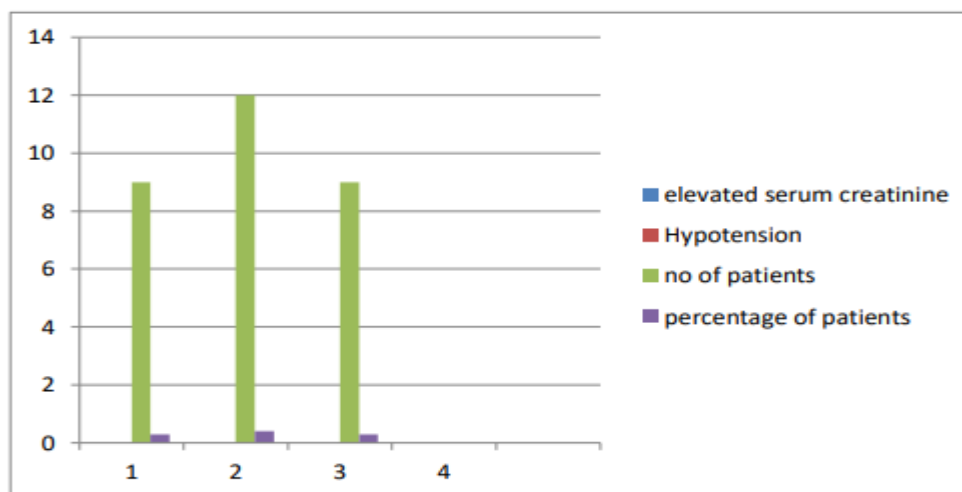


Fig 5.9 Induced ramipril effects in patients

**INDUCED VYMADA (ARNI) EFFECTS IN PATIENTS:**

S.no	Elevated Serum Creatinine	Hypotension	No of Patients	Percentage of patients
1	0.5-0.8	80-90	21	30%
2	0.9-1.2	90-100	23	32.85%
3	1.3-1.6	100-110	25	35.71%
4	1.7-2	110-120	12	17.14%



**Statistical analysis:** we have looked at the changes in blood pressure, serum creatinine levels and ejection fraction in the patients with heart failure.

**Report:** we had low ejection fraction along with the efficacy, safety and associated outcomes of Vymada.

**CONCLUSION:** In this study, we looked at changes in blood pressure, creatinine, ejection fraction, serum electrolytes, angioedema, and cough in patients with heart failure who had a low ejection fraction, as well as the efficacy, safety, and associated outcomes of sacubitril-valsartan (vymada). We discovered that both group's demonstrated efficacy and related outcomes in a timely manner, and most patients are treated with vymada.

**ETHICS AND CONSENT:** The entire study was conducted according to the AHA/ASA guidelines. All the relevant and necessary data was collected from in patient records, laboratory reports, prescriptions and by interviewing the patients.

**CONFLICTS OF INTEREST:** None

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