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Original Review Article

APPROVECAMYZYOS (MAVACAMTEN) NEW APPROACH IN CONGESTIVE HEART FAILURE: A REVIEW

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Abstract

FDA has approvecamyzyos (mavacamten) capsule. The main aim of camyzyos drug to treat obstructive hypertrophic cardiomyopathy (oHCM). Camyzyos, first and only FDA approved drug that inhibit the myosin inhibitor. camyzyos available in various range like, 2.5mg, 5mg, 10mg, 15mg, capsules for the treatment of adults with symptomatic obstructive hypertrophic cardiomyopathy. Mavacamten is a targeted inhibitor of cardiac myosin that reduces the number of myosin actin cross bridge and decreases contractility. Mavacamten is selective allosteric modulator of cardiac myosin ATPase. Currently available pharmacological symptoms of oHCM are not disease specific. oHCM is a monogenic C.V disorder that often goes undiagnosed and can provide a variety of symptoms like, shortness of birth, it causes sudden cardiac death. oHCM mainly causes due to excessive contraction of the left ventricle. In patients, camyzyos decrease the pressure gradient contributing to obstruction of VLOT.

Mavacamten trail show that mavacamten was superior to placebo at improving exercise capacity of health status. Some patients who take placebo HCM feel better, and some other patients develop side effects, but in the case of mavacamten try to give best pharmacological action, rarely produce side effect.

Keyword: Obstructive hypertrophic cardiomyopathy, myocardial stress, cardiacmyosin, left ventricle ejection flow.

INTRODUCTION

Mavacamten (MYK-461) sold under the brand name camzyos is an oral medication, recently approved by the food and drug administration (FDA) for the treatment of adult patients with symptomatic New York Heart Association (NYHA) class II-III, obstructive hypertrophic cardiomyopathy (OHMC). Mavacamten is an allosteric inhibitor of cardiac myosin, targeting thickened heart muscle walls. OHMC is a chronic disease characterized by an enlarged left ventricle out flow tract (LVOT), resulting in hyper contractility of the heart and improper blood circulation of the affected lobe. Cardiac hypertrophy iscommonly genetic mutation in myofilament of heart muscles and mavacamten prevent myofilament' s hyper contractility.

Chemical formula =C15H19N302

Molecular weight =273.33

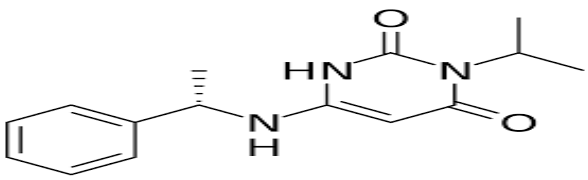
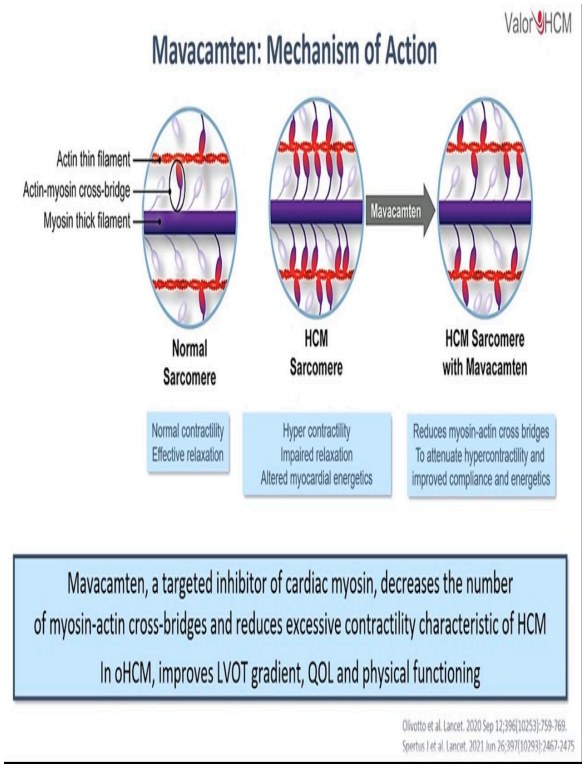


Figure 1: Chemical structure of Mavacamten

MECHANISM OF ACTION

Mavacamten concept of mechanism is reducing cardiac muscle contractility by inhibiting excessive myosin-actin cross bridge formation. That results in, reduced hyper contractility of left ventricular hypertrophy. Initial mechanism suggested that mavacamten primarily reduce the steady state ATPase activity by inhibiting the rate of phosphate release of B-cardiac myosin. Myosin is a protein molecule that can produce mechanical output in formation of cross bridge between myosin and Actin with the help of ATP hydrolysis.

When Actin and myosin bounded form a protein complex, classically called actomyosin. ATP hydrolysis in ADP and the energy produced in reaction is stored in the myosin head.



Absorption

Mavacamten has an estimated oral cavity related capsule.
85% absorption complete with in one hour.
T max of 1 hour In maximum absorption.

Distribution

The volume of distribution of mavacamten is simply calculated with the help of four species (mouse, rat, dog and cynomolgus monkey). With the help of blood steady state of distribution in these four species, we calculate the volume of distribution in human body is to be predicted 9.5 L/kg

Metabolism

Mavacamten metabolized in -

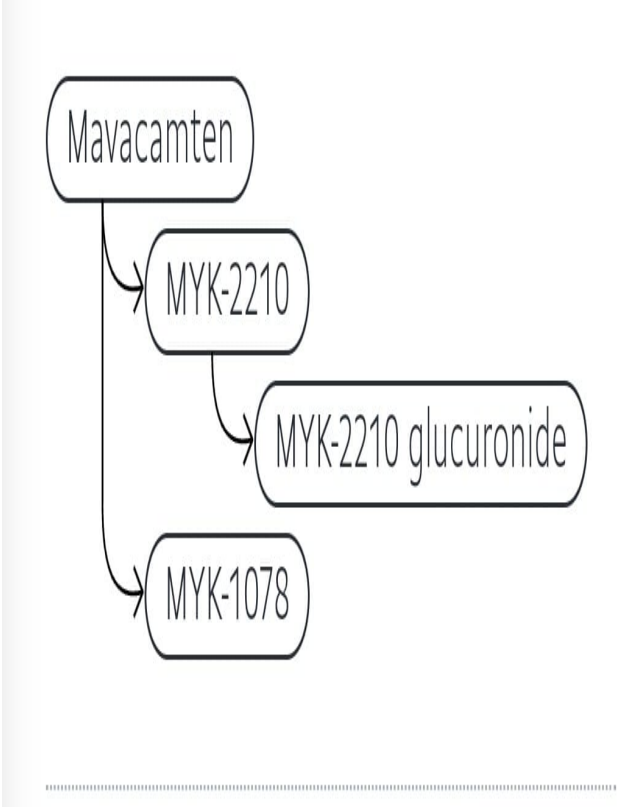


Figure3. Metabolized component

Mavacamten get breakdown into following components –

- MYK-2210
- MYK-2210 glucuronide
- MYK-1078

Rout of elimination

A single doors of 25 mg Mavacamten is eliminated following routes -

7% doses form of mavacamtenis recover in faces (1% unchanged).

85% eliminated through the urine (3% unchanged).

PROTEIN BINDING

Blood plasma protein binding of mavacamten camtene is 97% to 98%.

Means we tell us remaining 2% to 3% Mavacamitane is helping to treat obstructive hypertrophic cardiomyopathy.

HALF LIFE

Mavacamten half-life is 6 to 9 days in CYP2C19 normal metabolizers (NMs).

Which is prolonged in CYP2C19 poor metabolizers (PMs) to 23 days. Mavacamten capsule is a widely prescribed medicine used in the treatment of obstructive hypertrophic cardiomyopathy.

Mavacamten use alone or with other

Human observation of overdose or side effect of mavacamten is rare and limited.

Mavacamten overdose (area under curve) increase up to 220% in mild or moderate hepatic impairment.

When we give single dose of mavacamten up to 144 mg in aoHCM patient.

We see the serious adverse effect like vasovagal reaction, hypotension and asystole.

One serious adverse effect is greater reduction of left ventricle ejection flow (LVEF).

When we give normal 25 mg dose of aoHCM patient, experiencing 20% reduction in LVEF.

Serious side effects

Hives

Difficulty in breathing

Swelling of your face, lips, tongue.

Greater reduction of left ventricle ejection fraction.

CONCLUSION

Mavacamten improved exercise capacity and healthy status with in 30 weeks in a patient.

Mavacamten is a universal myosin inhibitor will be tolerated in oHCM patient.

Furthermore treatment, was associated with a significant reduction in NT-proBNP and cTnl, suggesting improvement in myocardial stress.

ABBREVATIONS

medicaments. It belongs to class of cardiac myosin inhibitor. It reduces the binding of actin myosin cross bridge and reduce the hypercontractility of heart and maintain the cardiac output of blood and heart rate. It is very useful for children.

SIDE EFFECTS

LVOT – left ventricle output track

LVEF- left ventricle ejection flow

NYHA- New York heart association

NMs-normal metabolize

PMs- poorly metabolize

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