Answers to Myocarditis and Heart Conditions

Dr. Bryan Ardis D.C.

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Home / Health Library / Diseases & Conditions / Myocarditis

Myocarditis

Myocarditis is inflammation of the heart muscle, or myocardium. This inflammation weakens your heart muscle, making it harder for your heart to pump. This can be caused by viral infections or inflammatory conditions.

https://my.clevelandclinic.org/health/diseases/22129-myocarditis

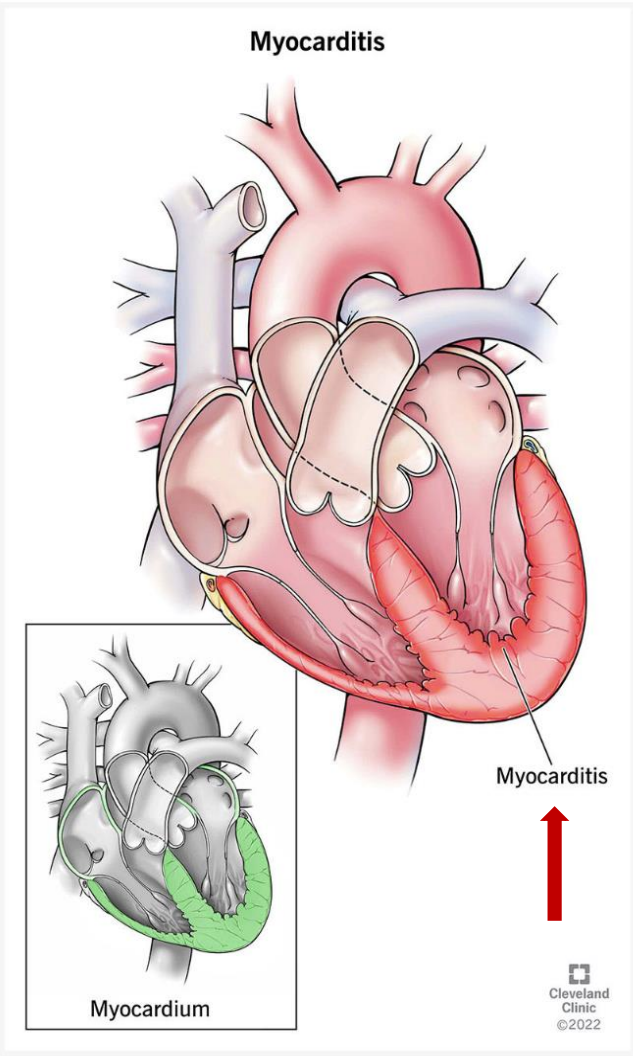
What is myocarditis?

Myocarditis is inflammation of your heart muscle (myocardium). This can weaken your heart muscle, making it more difficult for your heart to pump. This rare condition can affect people quickly or slowly over time.

Myocarditis is different from other types of inflammation because each kind happens in a different part of your heart. Pericarditis affects the sac around your heart. Endocarditis is an infection or inflammation of your heart valves.

Rare types of myocarditis include:

- Lymphocytic myocarditis.
- Giant cell myocarditis.
- Fulminant myocarditis.
- Eosinophilic myocarditis.



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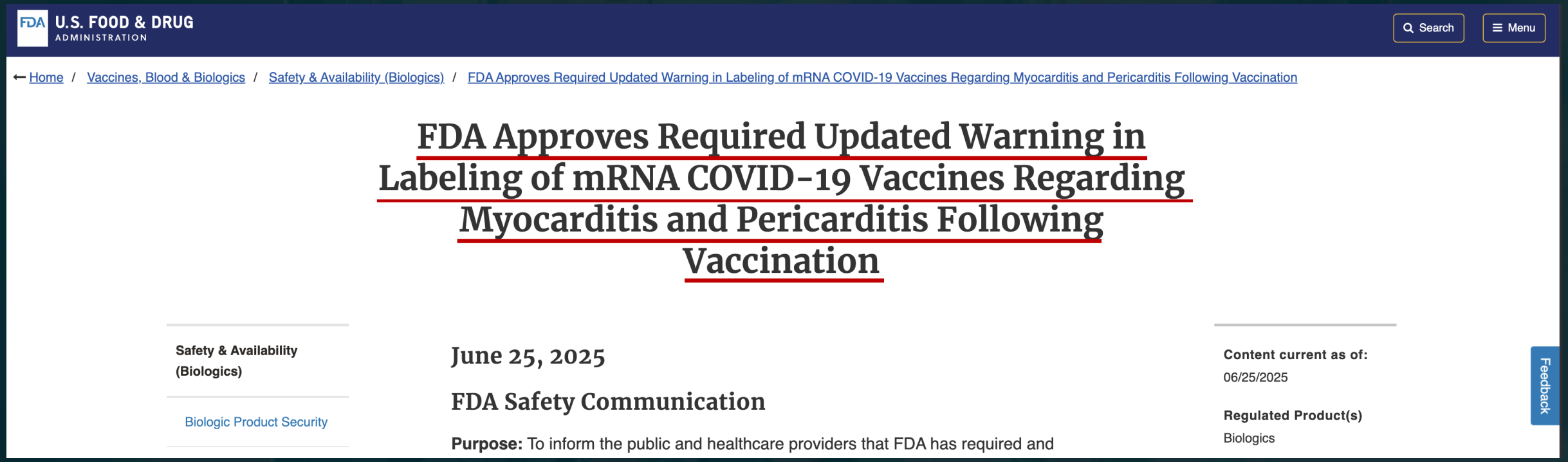
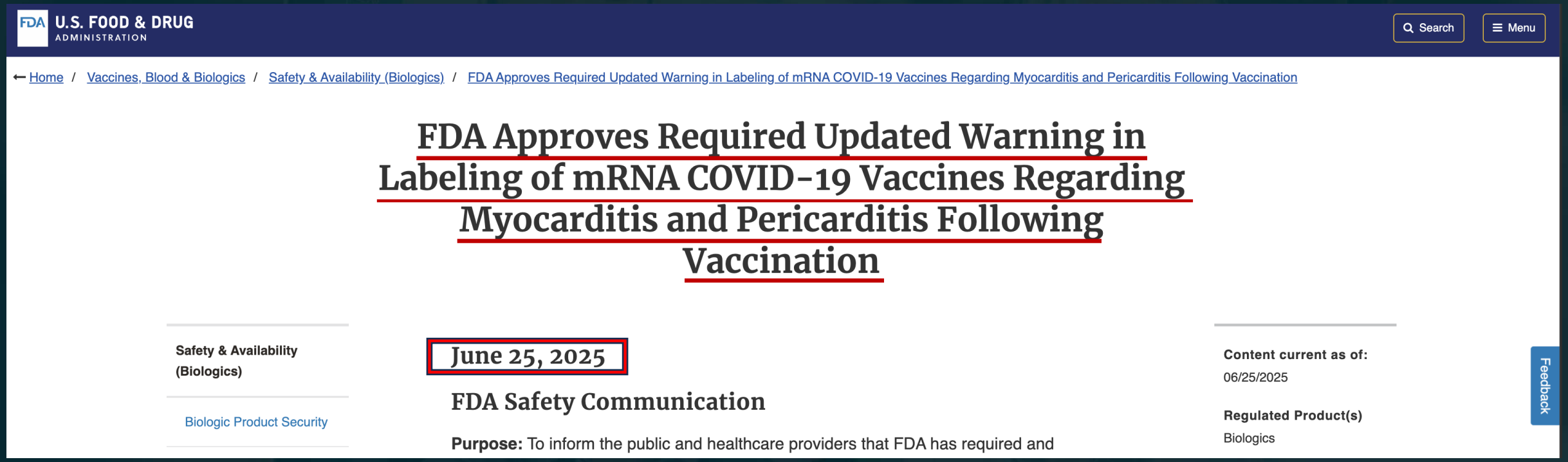


https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/fda-approves-required-updated-warning-labeling-mrna-covid-19-vaccines-regarding-myocarditis-and



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FDA Safety Communication

Purpose: To inform the public and healthcare providers that FDA has required and approved updates to the Prescribing Information for Comirnaty (COVID-19 Vaccine, mRNA) manufactured by Pfizer Inc. and Spikevax (COVID-19 Vaccine, mRNA) manufactured ModernaTX, Inc. to include new safety information about the risks of myocarditis and pericarditis following administration of mRNA COVID-19 vaccines. Specifically, FDA has required each manufacturer to update the warning about the risks of myocarditis and pericarditis to include information about (1) the estimated unadjusted incidence of myocarditis and/or pericarditis following administration of the 2023-2024 Formula of mRNA COVID-19 vaccines and (2) the results of a study that collected information on cardiac magnetic resonance imaging (cardiac MRI) in people who developed myocarditis after receiving an mRNA COVID-19 vaccine. FDA also required each manufacturer to describe the new safety information in the Adverse Reactions section of the Prescribing Information and in the Information for Recipients and Caregivers.

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Updated Warning for Myocarditis and Pericarditis

The warning on myocarditis and pericarditis in the Prescribing Information for Comirnaty and Spikevax has been updated to convey that the observed risk of myocarditis and pericarditis following vaccination with mRNA COVID-19 vaccines has been highest in males 12 through 24 years of age and to include the following new language:

> Based on analyses of commercial health insurance claims data from inpatient and outpatient settings, the estimated unadjusted incidence of myocarditis and/or pericarditis during the period 1 through 7 days following administration of the 2023-2024 Formula of mRNA COVID-19 vaccines was approximately 8 cases per million doses in individuals 6 months through 64 years of age and approximately 27 cases per million doses in males 12 through 24 years of age.

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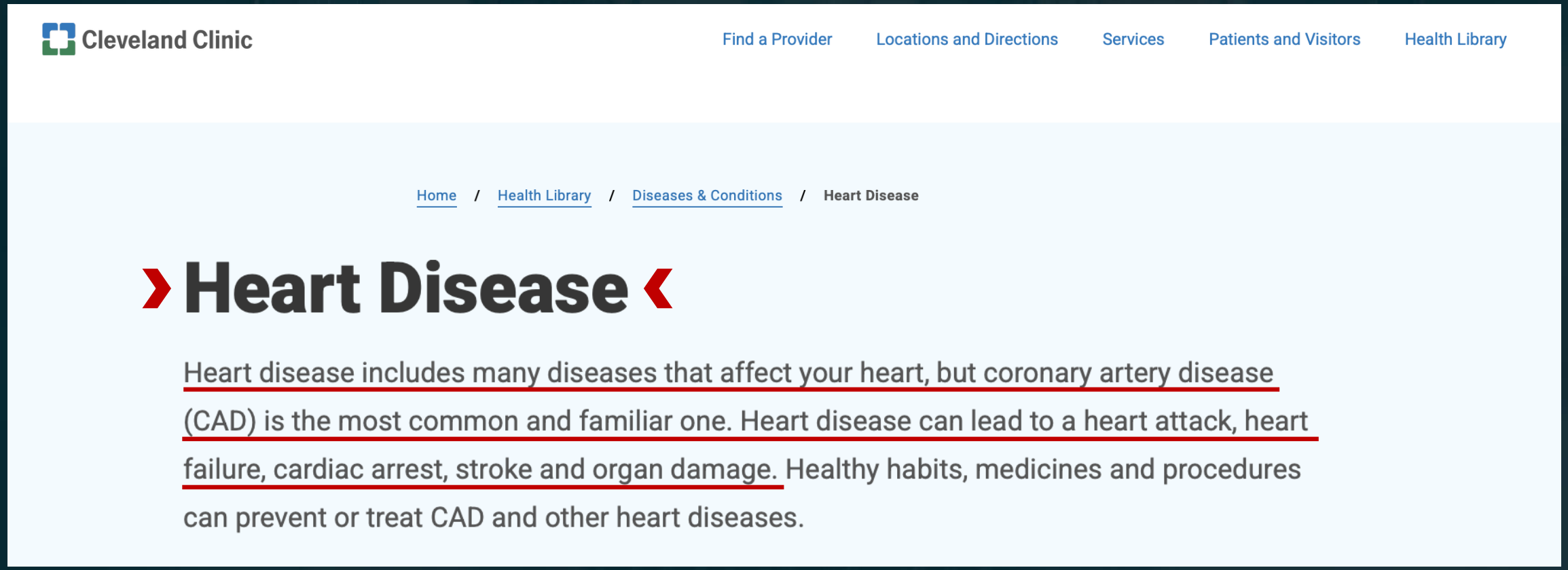
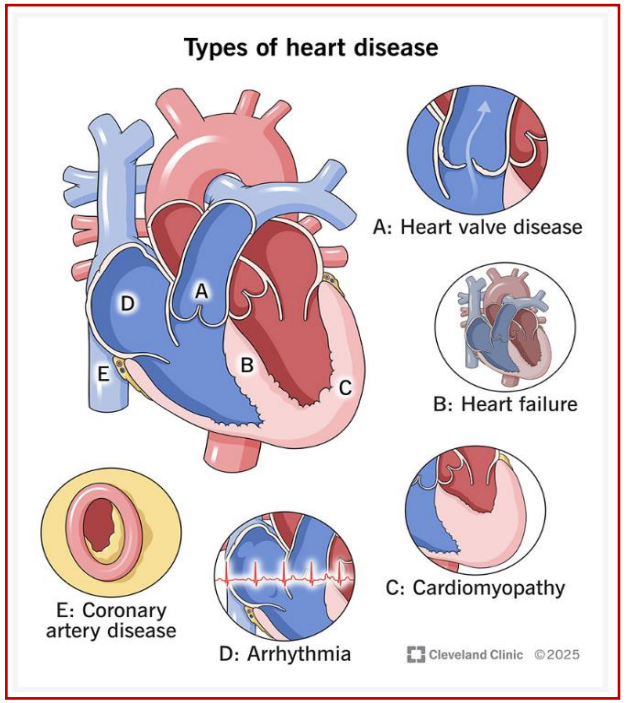


https://my.clevelandclinic.org/health/diseases/24129-heart-disease

What Is Heart Disease?

Heart disease describes a variety of issues that can affect your heart. Coronary artery disease (CAD) is the most common type. CAD, also known as coronary heart disease, can make your arteries narrow and lead to a heart attack. Heart disease can also affect your heart muscle, valves or electrical system. The symptoms you have and the treatments you get depend on the type of heart disease you have.



Heart disease has many types and can affect various parts of your heart.

When your heart isn't working well, it has trouble sending enough blood, oxygen and nutrients to your body. In a way, your heart delivers the fuel that keeps your body running. If your heart can't deliver that fuel, it affects everything your body's systems do.

Lifestyle changes and medications can keep your heart healthy and lower your chances of getting heart disease.

Heart disease is the top cause of death in the United States in people from most ethnic backgrounds.

https://my.clevelandclinic.org/health/diseases/24129-heart-disease

Types of heart disease

Heart disease types include:

- **Coronary artery disease**: Fatty deposits make your heart's blood vessels narrow.
- **Arrhythmias**: Abnormal heart rhythms keep your heart from beating in a coordinated way.
- **Heart valve diseases**: Valves that are too narrow or don't close right reduce blood flow.
- **Cardiomyopathy**: Stiff or thickened heart muscle can't pump blood well.
- **Heart failure**: Your heart can't pump blood well enough to keep up with your body's needs.
- **Congenital heart disease**: Problems with how your heart formed before birth prevent normal blood flow.
- **Pericardial issues**: A stiff or inflamed sac (pericardium) around your heart presses on your heart.

https://my.clevelandclinic.org/health/diseases/22129-myocarditis

Global, regional, and national burdens of myocarditis, 1990–2019: systematic analysis from GBD 2019

GBD for myocarditis

Research | Open access | Published: 19 April 2023

Volume 23, article number 714, (2023) Cite this article

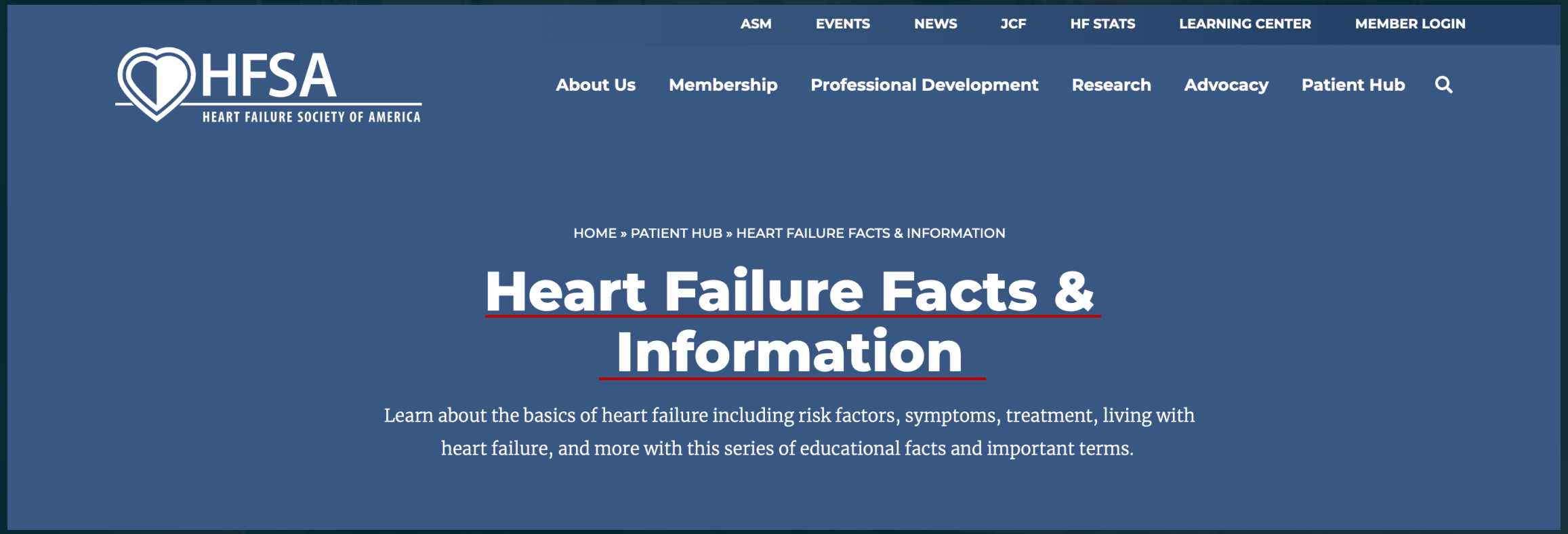
Yue-Wen-Ying Wang, Run-Ben Liu, Cheng-Yang Huang, Hao-Yang Li, Zhi-Xin Zhang, Xiao-Zheng Li, Jia-Ling Liu, Chao Zhang ✉, Xing Xiong ✉ & Yu-Ming Niu ✉

https://link.springer.com/article/10.1186/s12889-023-15539-5

Results

The number of myocarditis incidence increased by 62.19%, from 780,410 cases in 1990 to 1,265,770 cases in 2019. The ASIR decreased by 4.42% (95%CI, from -0.26% to -0.21%) over the past 30 years. The number of deaths from myocarditis increased by 65.40% from 19,618 in 1990 to 324,490 in 2019, but the ASDR was relatively stable over the investigated period. ASDR increased in low-middle SDI regions (EAPC=0.48; 95%CI, 0.24 to 0.72) and decreased in low SDI regions (EAPC=-0.97; 95%CI, from -1.05 to -0.89). The age-standardized DALY rate decreased by 1.19% (95%CI, from -1.33% to -1.04%) per year.

https://link.springer.com/article/10.1186/s12889-023-15539-5



https://hfsa.org/patient-hub/heart-failure-facts-information

How Common is Heart Failure?

Heart failure is very common. Although we have made progress in the treatment of many forms of heart disease, heart failure is a growing problem in the United States. Current estimates are that nearly 6.5 million Americans over the age of 20 have heart failure. One major study estimates there are 960,000 new heart failure cases annually. Not only is heart failure a major problem affecting many people, heart failure is also a major killer. Heart failure directly accounts for about 8.5% of all heart disease deaths in the United States. And, by some estimates heart failure actually contributes to about 36% of all cardiovascular disease deaths. One study notes that heart failure is mentioned in one in eight death certificates. Hospitalizations for heart failure are a huge burden on our healthcare system. In fact, it remains the number one cause of hospitalizations in our Medicare population.

https://hfsa.org/patient-hub/heart-failure-facts-information

What are the Risk Factors for Heart Failure?

Although heart failure may strike at any age, it is more common in people as they get older, making age an important risk factor. The risk of heart failure increases dramatically after the age of 65.

Other risk factors include the following :

- High blood pressure (hypertension)
- Fat deposits creating blockages in the heart's arteries (coronary artery disease)
- Heart attack (myocardial infarction)
- Damage to the heart valves or history of a heart murmur (valvular heart disease)
- Heart muscle disease and enlargement of the heart (cardiomyopathy)
- Heart defects at birth (congenital heart disease)
- Family history of enlarged heart (Familial cardiomyopathy)
- Diabetes
- Obesity
- Sleep apnea (Cor pulmonale)
- Severe lung disease (Cor pulmonale)

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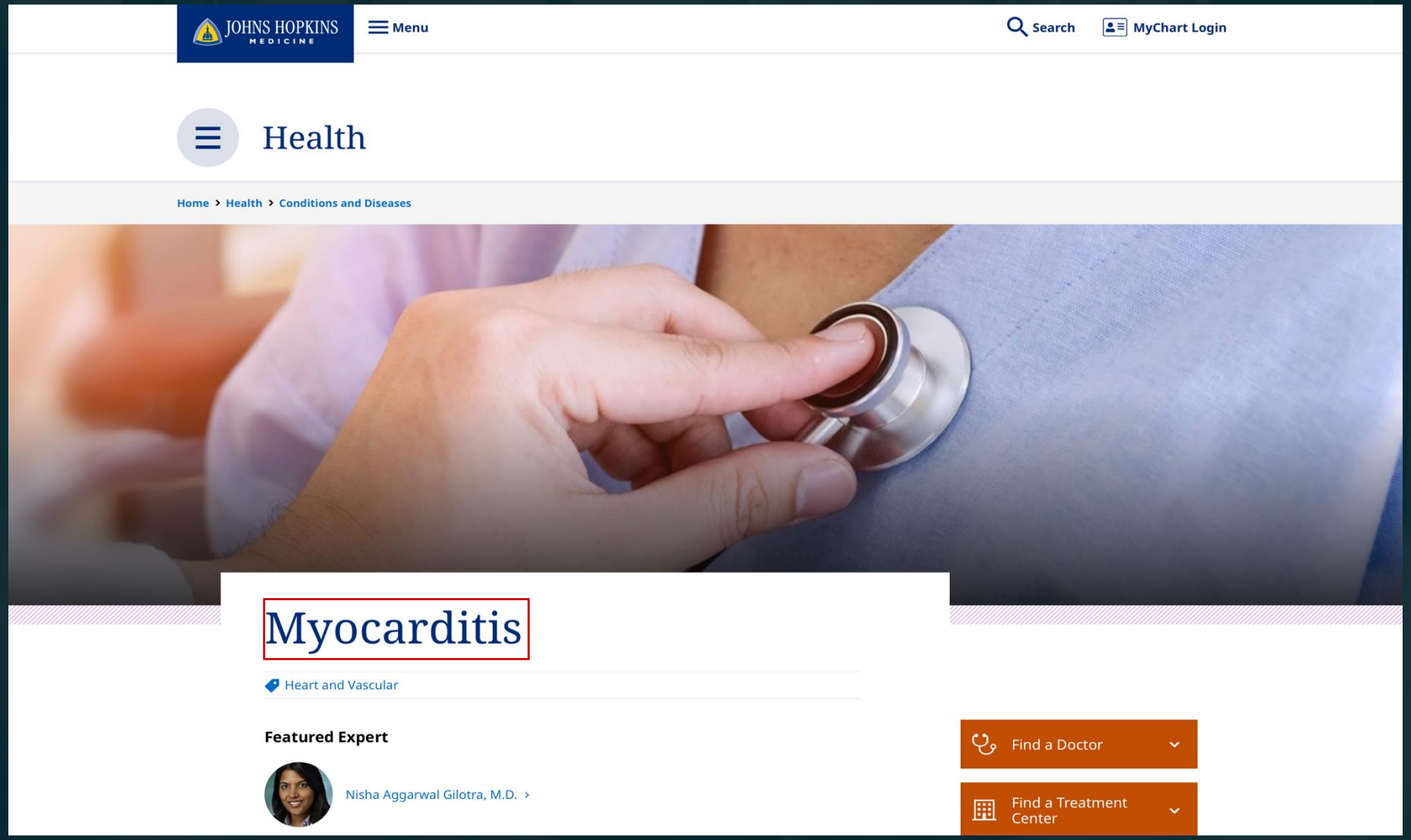
What is Being Prescribed to Help Myocarditis & Other Hearth Conditions?



https://www.hopkinsmedicine.org/health/conditions-and-diseases/myocarditis

Myocarditis Treatment

There is no curative treatment for myocarditis. However, your doctor may treat an underlying cause of your myocarditis if identified, and may prescribe the following medications based on the cardiac symptoms (heart failure, arrhythmia), type of myocarditis and how severe it is:

- Angiotensin-converting enzyme (ACE) inhibitor / angiotensin receptor blockers (ARBs): Lower blood pressure and help with remodeling of the heart muscle after myocarditis.
- Beta blockers: Improve arrhythmias and help with remodeling of the heart muscle.
- Diuretics: Help decrease fluid congestion in the body, which can occur when the heart muscle weakens.
- Corticosteroids: Reduce inflammation in the body; reserved for specific causes of myocarditis.

https://www.hopkinsmedicine.org/health/conditions-and-diseases/myocarditis

Home > Enalapril

Print Save

Enalapril

Generic name: enalapril (oral/injection) [*e-NAL-a-pril*]

Brand names: Epaned, Vasotec

Dosage forms: intravenous solution (1.25 mg/mL), oral liquid (1 mg/mL), oral tablet (10 mg; 2.5 mg; 20 mg; 5 mg)

Drug class: Angiotensin Converting Enzyme Inhibitors

Medically reviewed by Melisa Puckey, BPharm. Last updated on March 1, 2024.

Uses | Warnings | Before taking | Dosage | Side effects | Interactions | FAQ

What is enalapril?

Enalapril oral is used alone or in combination with other medications to treat high blood pressure in adults and children at least 1 month old.

Enalapril oral can also be used to prevent and treat congestive congestive heart failure in adults.

https://www.drugs.com/enalapril.html

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Important warnings

This medicine can cause some serious health issues

Oral route (tablet; solution; powder for solution)

Discontinue enalapril maleate as soon as possible when pregnancy is detected, since fetal toxicity, including injury and death to the developing fetus, can be caused by drugs that act directly on the renin-angiotensin system.

https://www.drugs.com/enalapril.html

Enalapril Side Effects

Medically reviewed by Drugs.com. Last updated on Oct 27, 2025.

General adverse events

The most frequently reported side effects included congestive heart failure, coronary artery disease, cough, dizziness, postural dizziness, fatigue, headache, hypotension, hypertension, hyperkalemia, microalbuminuria, and vomiting.[Ref]

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Cardiovascular

- **Common** (1% to 10%): Angina pectoris, chest pain, edema, hypotension, myocardial infarction, orthostatic hypotension, rhythm disturbances, tachycardia
- **Uncommon** (0.1% to 1%): Flushing, palpitation, Raynaud's phenomenon
- **Frequency not reported**: Atrial tachycardia, atrial bradycardia, atrial fibrillation, cardiac arrest, vasculitis

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Hepatic

- **Uncommon** (0.1% to 1%): Hepatic failure, hepatitis either hepatocellular or cholestatic, jaundice

https://www.drugs.com/enalapril.html

Gastrointestinal

- **Very common** (10% or more): Nausea
- **Common** (1% to 10%): Abdominal pain, diarrhea, vomiting
- **Uncommon** (0.1% to 1%): Constipation, dry mouth, dysgeusia, dyspepsia, gastric irritation, ileus, pancreatitis, peptic ulcer, stomatitis

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- **Common** (1% to 10%): Angioneurotic edema, angioneurotic edema of the face, extremities, lips, tongue, glottis and/or larynx, rash
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Nervous system

- **Very common** (10% or more): Dizziness
- **Common** (1% to 10%): Headache, postural dizziness, syncope, taste alteration, vertigo
- **Uncommon** (0.1% to 1%): Cerebrovascular accident, insomnia, paresthesia, somnolence, tinnitus
- **Frequency not reported**: Anosmia, ataxia, peripheral neuropathy (dysesthesia)

https://www.drugs.com/enalapril.html

Other

- **Very common** (10% or more): Asthenia
- **Common** (1% to 10%): Fatigue, orthostatic effects
- **Uncommon** (0.1% to 1%): Fever, increased blood urea nitrogen, malaise
- **Frequency not reported**: Death, elevated erythrocyte sedimentation rate, herpes zoster, positive ANA (Antinuclear antibody), serositis

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Respiratory

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- **Uncommon** (0.1% to 1%): Asthma, bronchospasm, pulmonary infiltrates, rhinorrhea, sore throat and hoarseness
- **Rare** (0.01% to 0.1%): Allergic alveolitis, eosinophilic pneumonitis, rhinitis
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Renal

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https://www.drugs.com/enalapril.html

Home > Metoprolol

Print Save

Metoprolol

Generic name: metoprolol [*me-TOE-pro-lol*]
Brand names: Kapspargo Sprinkle, Lopressor, Toprol-XL
Drug class: Cardioselective beta blockers

Medically reviewed by Melisa Puckey, BPharm. Last updated on Feb 29, 2024.

Uses | Warnings | Before taking | Dosage | Side effects | Interactions | FAQ

What is metoprolol?

Metoprolol is a beta-blocker that affects the heart and circulation (blood flow through arteries and veins).

Metoprolol is used to treat angina (chest pain) and hypertension (high blood pressure).

Metoprolol is also used to lower your risk of death or needing to be hospitalized for heart failure.

https://www.drugs.com/metoprolol.html

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Oral route (tablet)

Ischemic Heart Disease. Do not abruptly discontinue metoprolol tartrate tablets USP therapy in patients with coronary artery disease.

Severe exacerbation of angina, myocardial infarction and ventricular arrhythmias have been reported in patients with coronary artery disease following the abrupt discontinuation of therapy with beta-blockers.

When discontinuing chronically administered metoprolol tartrate tablets USP, particularly in patients with coronary artery disease, the dosage should be gradually reduced over a period of 1 to 2 weeks and the patient should be carefully monitored.

If angina markedly worsens or acute coronary insufficiency develops, metoprolol tartrate tablets USP administration should be reinstated promptly, at least temporarily, and other measures appropriate for the management of unstable angina should be taken.

Patients should be warned against interruption or discontinuation of therapy without the physician's advice.

Because coronary artery disease is common and may be unrecognized, it may be prudent not to discontinue metoprolol tartrate tablets USP therapy abruptly even in patients treated only for hypertension.

https://www.drugs.com/metoprolol.html

Metoprolol Side Effects

Medically reviewed by Drugs.com. Last updated on Jan 3, 2025.

Cardiovascular

- **Very common** (10% or more): Heart failure (up to 27.5%), hypotension (systolic blood pressure less than 90 mmHg) (up to 27.4%), bradycardia (heart rate less than 40 beats per minute) (up to 15.9%),
- **Common** (1% to 10%): Cold extremities, arterial insufficiency, palpitation, first degree heart block (P-R interval 0.26 seconds or greater), second or third degree heart block, postural disorders
- **Uncommon** (0.1% to 1%): Cardiogenic shock in patients with acute myocardial infarction

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- **Common** (1% to 10%): Cold extremities, arterial insufficiency, palpitation, first degree heart block (P-R interval 0.26 seconds or greater), second or third degree heart block, postural disorders
- **Uncommon** (0.1% to 1%): Cardiogenic shock in patients with acute myocardial infarction

Gastrointestinal

- **Common** (1% to 10%): Diarrhea, nausea, dry mouth, gastric pain, constipation, flatulence, heartburn, abdominal pain, vomiting
- **Frequency not reported**: Retroperitoneal fibrosis[Ref]

https://www.drugs.com/metoprolol.html

Metoprolol Side Effects

Medically reviewed by Drugs.com. Last updated on Jan 3, 2025.

Cardiovascular

- **Very common** (10% or more): Heart failure (up to 27.5%), hypotension (systolic blood pressure less than 90 mmHg) (up to 27.4%), bradycardia (heart rate less than 40 beats per minute) (up to 15.9%),
- **Common** (1% to 10%): Cold extremities, arterial insufficiency, palpitation, first degree heart block (P-R interval 0.26 seconds or greater), second or third degree heart block, postural disorders
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Gastrointestinal

- **Common** (1% to 10%): Diarrhea, nausea, dry mouth, gastric pain, constipation, flatulence, heartburn, abdominal pain, vomiting
- **Frequency not reported**: Retroperitoneal fibrosis[Ref]

Respiratory

- **Common** (1% to 10%): Shortness of breath, wheezing, dyspnea

https://www.drugs.com/metoprolol.html

Nervous system

- **Common** (1% to 10%): Dizziness, vertigo, stroke, headache
- **Uncommon** (0.1% to 1%): Paresthesia, somnolence, impaired concentration
- **Rare** (0.01% to 0.1%): Alertness decreased
- **Very rare** (less than 0.01%): Amnesia/memory impairment, tinnitus, taste disturbance
- **Frequency not reported**: Short-term memory loss

https://www.drugs.com/metoprolol.html

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Dermatologic

- **Common** (1% to 10%): Pruritus, rash
- **Uncommon** (0.1% to 1%): Sweating increased

https://www.drugs.com/metoprolol.html

Nervous system

- **Common** (1% to 10%): Dizziness, vertigo, stroke, headache
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Dermatologic

- **Common** (1% to 10%): Pruritus, rash
- **Uncommon** (0.1% to 1%): Sweating increased

Psychiatric

- **Common** (1% to 10%): Depression
- **Uncommon** (0.1% to 1%): Insomnia, nightmare

https://www.drugs.com/metoprolol.html

Home > Furosemide

Print Save

Furosemide

Generic name: furosemide (oral/injection) [*fur-OH-se-mide*]
Brand names: Lasix, Lasix ONYU, Diaqua-2, Lo-Aqua, Furoscix
Dosage forms: oral tablet (20 mg; 40 mg; 80 mg), oral liquid (10 mg/mL), oral solution (40 mg/5 mL), ... show all 6 dosage forms
Drug class: Loop diuretics

Medically reviewed by Melisa Puckey, BPharm. Last updated on Oct 10, 2025.

Uses | Side effects | Warnings | Before taking | Dosage | Interactions | FAQ

What is furosemide?

Furosemide is a loop diuretic used to treat fluid retention (edema) in people with congestive heart failure, liver disease, or a chronic kidney disorder such as nephrotic syndrome. Furosemide is also used to treat high blood pressure (hypertension).

https://www.drugs.com/sfx/furosemide-side-effects.html

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Important warnings

This medicine can cause some serious health issues

Oral route (tablet)

Furosemide is a potent diuretic which, if given in excessive amounts, can lead to a profound diuresis with water and electrolyte depletion. Therefore, careful medical supervision is required and dose and dosage interval must be adjusted to the individual patient's needs.

https://www.drugs.com/sfx/furosemide-side-effects.html

Furosemide Side Effects

Medically reviewed by Drugs.com. Last updated on Sep 24, 2025.

Metabolic adverse events

- **Common** (1% to 10%): Hyponatremia, hypochloremia, hypokalemia, blood cholesterol increased, blood uric acid increased, gout
- **Uncommon** (0.1% to 1%): Thirst, glucose tolerance decreased
- **Rare** (0.01% to 0.1%): Anorexia, serum triglycerides increased
- **Frequency not reported**: Hyperglycemia, diabetes mellitus, hyperuricemia, metabolic alkalosis, hypocalcemia, hypomagnesemia, hypovolemia, dehydration, tetany, serum potassium decreased, Pseudo-Bartter syndrome, electrolyte disturbances, serum calcium decreased[Ref]

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Hematologic

- **Common** (1% to 10%): Hemoconcentration
- **Uncommon** (0.1% to 1%): Thrombocytopenia

https://www.drugs.com/sfx/furosemide-side-effects.html

Genitourinary

- **Common** (1% to 10%): Urine volume increased
- **Frequency not reported**: Glycosuria, bladder spasm, urinary retention, urinary incontinence[Ref]

https://www.drugs.com/sfx/furosemide-side-effects.html

Genitourinary

- **Common** (1% to 10%): Urine volume increased
- **Frequency not reported**: Glycosuria, bladder spasm, urinary retention, urinary incontinence[Ref]

Other

- **Uncommon** (0.1% to 1%): Deafness, fatigue
- **Rare** (less than 0.1%): Sensation of pressure in the head, dysacusis, asthenia, fever, febrile conditions, malaise
- ★ **Frequency not reported**: Weakness, sudden death, hearing disorders, hearing loss, paradoxical swelling[Ref]

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Nervous system

- **Rare** (0.01% to 0.1%): Paresthesia, vertigo, dizziness, sleepiness, tinnitus, hyperosmolar coma
- **Frequency not reported**: Hepatic encephalopathy, headache, fainting and loss of consciousness, drowsiness, lethargy, sweet taste[Ref]

https://www.drugs.com/sfx/furosemide-side-effects.html

Cardiovascular

- **Uncommon** (0.1% to 1%): Cardiac arrhythmia
- **Rare** (less than 0.1%): Vasculitis
- **Frequency not reported**: Systemic vasculitis, necrotizing angiitis, orthostatic hypotension, thrombophlebitis, acute hypotension, circulatory collapse, persistent patent ductus arteriosus during the first few weeks of life in premature infants with respiratory distress syndrome, blood pressure decreased, shock, hypotension, thrombosis, orthostatic blood pressure decreased[Ref]

https://www.drugs.com/sfx/furosemide-side-effects.html

Home > Prednisone

Print Save

Prednisone

Pronunciation: *PRED-ni-sone*
Generic name: prednisone
Brand names: Rayos, Sterapred, Deltasone
Drug class: Glucocorticoids

Medically reviewed by Melisa Puckey, BPharm. Last updated on May 13, 2025.

Uses | Warnings | Before taking | Dosage | Side effects | Interactions | FAQ

What is prednisone?

Prednisone is a corticosteroid medicine used to decrease inflammation and keep your immune system in check, if it is overactive. Prednisone is used to treat allergic disorders, skin conditions, ulcerative colitis, Crohn's disease, arthritis, lupus, psoriasis, asthma, chronic obstructive pulmonary disease (COPD) and many more conditions.

https://www.drugs.com/prednisone.html

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https://www.drugs.com/prednisone.html

Prednisone Side Effects

Medically reviewed by Drugs.com. Last updated on Feb 17, 2025.

General adverse events

The most commonly reported adverse effects associated with corticosteroid use include fluid retention, alteration in glucose tolerance, high blood pressure, behavior and mood changes, increased appetite and weight gain. Occurrence is often associated with dose and duration of therapy; long-term effects include HPA suppression, Cushingoid appearance, cataracts and increased intraocular pressure/glaucoma, osteoporosis and vertebral compression fractures.[Ref]

https://www.drugs.com/prednisone.html

Prednisone Side Effects

Medically reviewed by Drugs.com. Last updated on Feb 17, 2025.

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Metabolic

- **Frequency not reported**: Decreased carbohydrate and glucose tolerance, increased requirements for insulin or oral hypoglycemic agents in diabetics, lipid abnormal, negative nitrogen balance caused by protein catabolism, hypokalemia, hypokalemic alkalosis, metabolic alkalosis, potassium loss, sodium retention with resulting edema, increased appetite and weight gain, anorexia and weight loss, hypertriglyceridemia, hypercholesterolemia[Ref]

https://www.drugs.com/prednisone.html

Cardiovascular

- **Frequency not reported**: Bradycardia, cardiac arrest, cardiac arrhythmias, cardiac enlargement, circulatory collapse, congestive heart failure, ECG changes caused by potassium deficiency, edema, fat embolism, hypotension, hypertension or aggravation of hypertension, hypertrophic cardiomyopathy in premature infants, myocardial rupture following recent myocardial infarction, necrotizing angiitis, syncope, tachycardia, thromboembolism, thrombophlebitis, vasculitis[Ref]

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Endocrine

- **Frequency not reported**: Adrenal insufficiency associated symptoms including arthralgias, buffalo hump, amenorrhea, postmenopausal bleeding or menstrual irregularities, development of cushingoid state, hyperthyroidism, hypothyroidism, moon face, secondary adrenocortical and pituitary unresponsiveness (particularly in times of stress as in trauma, surgery, or illness), increased or decreased motility and number of spermatozoa[Ref]

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Ocular

- **Frequency not reported**: Blurred vision, cataracts (including posterior subcapsular cataracts) central serous chorioretinopathy, secondary bacterial, fungal, and viral infections, exophthalmos, glaucoma, increased intraocular pressure[Ref]

https://www.drugs.com/prednisone.html

Gastrointestinal

- **Frequency not reported**: Abdominal distention, abdominal pain, constipation, diarrhea, gastric irritation, nausea, oropharyngeal candidiasis, pancreatitis, peptic ulcer with possible perforation and hemorrhage, perforation of the small and large intestine (particularly in patients with inflammatory bowel disease), ulcerative esophagitis, vomiting[Ref]

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Musculoskeletal

- **Frequency not reported**: Arthralgia, aseptic necrosis of femoral and humeral heads, increased risk of fracture, loss of muscle mass, muscle weakness, myalgias, osteopenia, osteoporosis, pathologic fracture of long bones, steroid myopathy, tendon rupture (particularly of the Achilles tendon), vertebral compression fractures, suppression of growth in pediatric patients[Ref]

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Gastrointestinal

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Nervous system

- **Frequency not reported**: Arachnoiditis, benign intracranial hypertension, convulsions, dementia, dizziness, EEG abnormalities, impaired cognition, increased intracranial pressure with papilledema, increased motor activity, ischemic neuropathy, severe tiredness or weakness, meningitis, neuritis, neuropathy, paraparesis/paraplegia, sensory disturbances[Ref]

https://www.drugs.com/prednisone.html

Psychiatric

- **Frequency not reported**: Amnesia, anxiety, delirium, depression, emotional instability and irritability, euphoria, hallucinations, severe psychiatric symptoms, insomnia, long-term memory loss, mania, mood swings, neuritis, neuropathy, paresthesia, personality changes, psychiatric disorders including steroid psychoses or aggravation of preexisting psychiatric conditions, restlessness, schizophrenia, verbal memory loss, withdrawn behavior[Ref]

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Psychiatric

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Dermatologic

- **Frequency not reported**: Acne, acneiform eruptions, allergic dermatitis, alopecia, angioedema, angioneurotic edema, atrophy and thinning of skin, dry scaly skin, ecchymosis and petechiae (bruising), erythema, facial edema, hirsutism, impaired wound healing, increased sweating, lupus erythematosus-like lesions, perineal irritation, purpura, rash, striae, subcutaneous fat atrophy, suppression of reactions to skin tests, telangiectasis, thin fragile skin, thinning scalp hair, urticaria, hypertrichosis[Ref]

https://www.drugs.com/prednisone.html

What Research Finds to Help Myocarditis & Heart Conditions Naturally!!

Indian Journal of Clinical Biochemistry, 2003, 18 (2) 71-79

CARDIOPROTECTIVE ACTIVITY OF SYNTHETIC GUGGULSTERONE (E AND Z - ISOMERS) IN ISOPROTERENOL INDUCED MYOCARDIAL ISCHEMIA IN RATS: A COMPARATIVE STUDY.

Ramesh Chander*, Farhan Rizvi, A.K Khanna and Ram Pratap**

*Division of Biochemistry and **Medicinal Chemistry, Central Drug Research Institute Lucknow-226001, India.*

ABSTRACT

Guggulsterone, a mixture of cis (E) and trans (Z) isomers (7:3 w/w) was synthesized from 16-DPA. The isomers were separated by column chromatography and evaluated for cardioprotective and antioxidant activities. Myocardial necrosis induced by isoproterenol in rats caused marked increase in serum creatine phosphokinase and glutamate pyruvate transaminase. Simultaneously in ischemic heart, phospholipase, xanthine oxidase and lipid peroxides were enhanced following depletion of glycogen, phospholipids and cholesterol. Treatment with guggulsterone and its both isomers at the dose of 50 mg/kg po., significantly protected cardiac damage as assessed by the reversal of blood and heart biochemical parameters in ischemic rats. The cardioprotective activity of guggulsterone and of both the isomers were compared with that of gemfibrozil at the same doses. Guggulsterone and both the isomers at tested concentrations (5-20mM) inhibited oxidative degradation of lipids in human low-density lipoprotein and rat liver microsomes induced by metal ions *in vitro*. The drug counteracted against the generation of superoxide anions ($O^{\cdot}_2$) and hydroxyl radicals (OH^{-}) in non-enzymic test systems. It is suggested that cardioprotective and antioxidant activities of synthetic guggulsterone and guggulsterone obtained from gum resin *Commiphora mukul* that contains isomers E & Z in the ratio of 46:54w/w are the same.

https://www.researchgate.net/publication/232721798_Cardioprotective_activity_of_synthetic_guggulsterone_E_and_Z-isomers_in_isoproternol_induced_myocardial_ischemia_in_rats_A_comparative_study

Effect of Drugs on Cardiac Ischemia - Administration of isoproterenol to i.e. to induce ischemia in rats increase in serum levels of CPK, GOT, GPT and alkaline phosphates by 111, 42, 85 and 29 % respectively as compared to control (Table-1). However treatment of ischemic rats with guggulsterone isomers E or Z or E+Z or gemfibrozil at the dose of 50 mg/kg p.o. reversed the serum levels of CPK, GOT, GPT and alkaline phosphatase (Table 1). In ischemic heart (Table-2) there was a significant redution in levels of Ca-ATPase (45%), glycogen (20%), phospholipids (48%) and total cholesterol (46%) as compared to control. However there was a significant increase in Phospholipase (217%) and xanthine oxidase (56%) along with increase in lipid peroxide (66%). Where as treatment with guggulsterone isomer E or Z or mixture of E+Z significantly reversed the biochemical parameters in serum and hearts as compared to the levels of ischemic group (Table 2).

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are several reports(14,19,20) on effectiveness of guggulsterone isolated from *C. mukul* against isoproterenol induced myocardial ischemia in experimental animals and these effects on heart and blood parameters at the same doses were almost comparable to our results. The increase in xanthine oxidase and lipid peroxide in damaged rat heart was protected significantly by the treatment with guggulsterone and by both isomers in present study. It has been reported that xanthine dehydrogenase is converted into xanthine oxidase under ischemic conditions that at the moment of reoxygenation (respiratory burst) produces O^{2-} and uric acid. The O^{2-} and H_2O_2 are the main source of OH^-, which play an important role in cardiac necrosis

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(29). Guggulsterone protects LDL against oxidative modifications in lipid and protein components induced by Cu+2 *in vitro* (30). The protection provided by the guggulsterone and the two isomers against the cardiac damage may be due to the ability of test drugs to inhibit the generation of O^{2-} free radicals induced by isoproterenol treatment in rats. A standardized alcoholic fraction from guggulipid containing E- guggulsterone (cis isomer) is already studied and proven for its protection against free radical damage in the skin (31). It is suggested that isoproterenol may induce hypothyroidism that contributes to the development of myocardial ischemia in rats. It has been reported that (Z) guggulsterone enhanced the synthesis of thyroid hormones and tissue oxygen uptake (32,33).

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Pharmagological studies showed guggulsterone caused decrease in the brain levels of catecholamines and dopamine β hydroxylase activity in rats (34). Recent reports (35,36) showed that guggulsterone is a potent antagonist of bile acid receptor: the farnesoide- x -receptor (FXR) that is activated by bile acids. It is suggested that antioxidant property, alterations caused in the levels of brain biogenic monoamines, thyrogenic action and antagonism for FXR by guggulsterone suitably explain the lipid lowering and anti ischemic activity of the drug. Present data demonstrate that Z-isomer of guggulsterone at the same doses exerted more cardioprotective and antioxidant activity of the drug.

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Ancient Science of Life, Vol. IV, No.1, July1984, Pages 9-19

ROLE OF PUSHKARA GUGGULU IN THE MANAGEMENT OF ISCHAEMIC HEART DISEASE

S.N.TRIPATHI, B.N. UPADHYAY, S.D. SHARMA, V.K. GUPTA AND TRIPATHI

Institute of medical Sciences, Banaras Hindu University, Varanasi 221005, India

Received: October 11, 1983 Accepted: February 10, 1984

ABSTRACT: On the basis of authentic references from the literature of ayurveda and on our own observations, Puskara-Guggulu, a combination of oleoresin of C. mukul and I-recemosa, has been clinically tried on a series of ECG proved 50 patients of ischaemic heart disease. This has been administered in the dose of 6 gms per day, in three divided doses upto a period of four months. Precordial pain, discomfort and dyspnoea on effort have been controlled. Mean Serum cholesterol has been found to be decreased by 17.47%. Apart from that, marked improved in the E. C. G. pattern in 30% cases has been recorded in terms of ST-segment and T wave changes, On the whole the result was cured 10% relieved 60%, improved 20% and unchanged 10%, offering a great hope for the prevention and cure of ischaemic heart disease.

https://pmc.ncbi.nlm.nih.gov/articles/instance/3331490/pdf/ASL-4-9.pdf

Fifty cases in this series were treated with Puskara Guggulu in the dose of 6 gms a day, in four divided doses. The initial average serum cholesterol was 248.66 mgm% (±6.81). It was reduced to 235.44 mgm%(±5.98) first month, 224.86 mgm% (±5.15) second months, 214.57 mgm% (±4.47), third months and 205.22 mgm% (4.08) after four months of treatment. The average reduction was 13.22 mgm% (±1.40), 23.80 mgm% (±2.52), 34.09 mgm% (±3.33) and 43.44 mgm% (±4.04) in first, second, third and fourth months, respectively. On statistical analysis, it was highly significant ($P<0.001$). The percent reduction was 5.32%, 9.57%, 13.71% and 17.47% at the end of first, second and third and fourth months respectively (shown in tables). Thus the serum cholesterol lowering effect of Puskara Guggulu was found to be highly significant. (Fig. 2).

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Fifty cases in this series were treated with Puskara Guggulu in the dose of 6 gms a day, in four divided doses. The initial average serum cholesterol was 248.66 mgm% (±6.81). It was reduced to 235.44 mgm%(±5.98) first month, 224.86 mgm% (±5.15) second months, 214.57 mgm% (±4.47), third months and 205.22 mgm% (4.08) after four months of treatment. The average reduction was 13.22 mgm% (±1.40), 23.80 mgm% (±2.52), 34.09 mgm% (±3.33) and 43.44 mgm% (±4.04) in first, second, third and fourth months, respectively. On statistical analysis, it was highly significant ($P<0.001$). The percent reduction was 5.32%, 9.57%, 13.71% and 17.47% at the end of first, second and third and fourth months respectively (shown in tables). Thus the serum cholesterol lowering effect of Puskara Guggulu was found to be highly significant. (Fig. 2).

https://pmc.ncbi.nlm.nih.gov/articles/instance/3331490/pdf/ASL-4-9.pdf

In this four months trial of Puskara Guggulu in 50 patients of I. H. D., the over all assessment of result is represented in the above tables. In this trial 10% cases were cured, I. e. they did not have precordial pain and the serum cholesterol and E. C. G. were within normal limits after 4 months treatment. The percentage of the relieved patients was 60% in these cases, there was improvement in precordial pain and any one of the serum cholesterol or E. C. G., The percentage of improved patients was 20% i. E. in the cases in which there is only improvement in precordial pain, but no improvement in precordial pain, but no improvement in serum cholesterol or E. C.

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Overall assessment of Result in clinical Trial

S. No.	Result	No. of patients	percentage
1	Cured	5	10
2	Relieved	30	60
3	Improved	10	20
4	Unchanged	5	10
Total		50	100

https://pmc.ncbi.nlm.nih.gov/articles/instance/3331490/pdf/ASL-4-9.pdf

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Therapeutic Effects of Guggul and Its Constituent Guggulsterone: Cardiovascular Benefits

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https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1527-3466.2007.00023.x

Most of the subsequent animal studies were conducted in rats. Consistent results were obtained with guggelsterone at doses ranging from 5 to 100 mg/kg of body weight. In one study guggulsterone, 25 mg/kg p.o., lowered serum cholesterol and triglycerides by 27% and 30%, respectively, after a treatment period as short as 10 days (Singh et al. 1990). In parallel with the decrease in cholesterol and triglycerides, low-density lipoprotein (LDL) binding to hepatic cell membranes was significantly increased (Singh et al. 1990). The lipid lowering action of guggulsterone was also investigated in rats with hyperlipidemia induced by triton or cholesterol-feeding (Chander et al. 1996). In triton-fed rats guggulsterone, at a dose of 50 mg/kg p.o., significantly decreased serum lipids. In cholesterol-fed rats guggulsterone, at a dose of 5 mg/kg p.o. for 30 days, decreased lipids, LDL, and very low-density lipoprotein (VLDL) levels. In addition, it was found that guggulsterone treatment increased lipolytic enzyme activity as well as receptor-mediated catabolism of LDL (Chander et al. 1996). In another study, Fisher rats were fed a diet containing 1–5.6% gugulipid for 10 days. Gugulipid dose-dependently decreased serum triglycerides by 22–70%, whereas total serum cholesterol was increased by 8–23%. Further analysis of the serum lipoproteins indicated that the increase in total cholesterol was due to increase in high-density lipoprotein (HDL), whereas LDL and VLDL were actually decreased (Cui et al. 2003).

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The Role of Dietary Magnesium in Cardiovascular Disease

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In 1988, Elin introduced the term chronic latent magnesium deficiency as an individual with a reduction in total body magnesium but with a serum total magnesium content within an accepted reference interval [10]. The term chronic indicated that this status could take a long period of time to occur. Chronic latent magnesium deficiency is prevalent in humans [11], which indicates that many individuals could have an inadequate magnesium status that could contribute to the occurrence of cardiovascular disease. In 1993, a second experimental magnesium deficiency was induced in humans by feeding a liquid diet that contained 0.5 mmol (121.5 mg)/day magnesium [12], an amount that is near what some individuals might routinely consume. This deficiency increased angiotensin-induced plasma aldosterone and thromboxane synthesis, which suggested an effect on vascular disease.

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In the late 1990s and early 2000s, a series of metabolic unit experiments were conducted to test the hypothesis that naturally occurring inadequate intakes of magnesium resulted in negative magnesium balance and inadequate magnesium status such that metabolic and physiologic changes occurred that responded to magnesium supplementation. In addition to getting results to support the hypothesis, many of the changes found in healthy postmenopausal women were in variables associated with cardiovascular function. When consuming diets comprised of conventional foods providing between 100 and 118 mg/2000 kcal, these changes included adversely affecting cardiovascular function during submaximal work [13], an increase in both supraventricular and supraventricular plus ventricular beats [14], decreased urinary calcium excretion and increased calcium balance and thus increased calcium retention [15,16], decreased urinary excretion of phosphorus and potassium [17], altered oxidative metabolism, and induced heart rhythm changes, including atrial fibrillation [17]. Also, during this time, epidemiologic and clinical evidence that chronic latent magnesium deficiency was associated with hypertension was receiving attention [18,19].

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Table 1 lists many of these types of studies reported since 2018. In addition to healthy populations, a low magnesium status has been associated with cardiovascular disease in patients with health problems such as diabetes and chronic kidney disease. For example, systemic reviews and meta-analyses have found an inverse relation between magnesium intake and stroke [25] and between serum magnesium and all-cause cardiovascular mortality in chronic kidney disease and end-stage renal disease patients [26]. An umbrella meta-analysis of randomized controlled trials found that magnesium supplementation decreased both systolic and diastolic blood pressure in an analysis that included 8610 subjects [27]. The decrease was particularly effective at doses of ≥400 mg/day for ≥12 weeks. A prospective study with a total of 149,929 participants found that a sufficient dietary intake was associated with lower risks of atherosclerotic cardiovascular disease and mortality in those with type 2 diabetes [28].

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The Connection Between Magnesium and Heart Health: Understanding Its Impact on Cardiovascular Wellness

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Kokubo et al. assessed the dietary magnesium intake of 85,293 Japanese participants aged 45-74 years, free of cancer or CVD, using 138-item food-frequency questionnaires from the Japan Public Health Center-Based Prospective Study [41]. In a study conducted by Abbott et al., a cohort of 7,172 men aged 45-68 participated in the Honolulu Heart Program, where 24-hour food recall techniques were employed to assess magnesium intake [42]. Both studies discovered a link between a lower incidence of coronary heart disease and a higher dietary magnesium consumption [41,42].

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Zhang et al. reported results from the Japan Collaborative Cohort Study, which involved 58,615 Japanese adults in the age group 40-79, whose dietary magnesium consumption was measured by food frequency questionnaires [43]. Food magnesium intake was found to be inversely linked with death from coronary heart disease and ischemic strokes [43].

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A study was conducted by Raghu et al. on 55 participants with a cardiac response rate of more than 120 beats/minute and atrial fibrillation [37]. Of them, 75% received treatment with magnesium sulfate ($MgSO_4$) and 25% received a placebo [37]. In addition to conventional therapy, 2.5 grams of intravenous $MgSO_4$ was given, and it led to a conversion to sinus rhythm and a reduction in pulse rate [37]. Davey and Teubner observed similar outcomes in a prospective, randomized, double-blind, placebo-controlled experiment on 199 adults with fast atrial fibrillation who were admitted to the emergency room [38]. $MgSO_4$ was given to 102 participants, while a placebo was given to 97 [38]. It was shown that the $MgSO_4$ group had a higher chance of achieving a heart rate of less than 100 beats/minute and changing to sinus rhythm [38].

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Two hundred patients undergoing their first coronary artery bypass grafting procedure were examined by Toraman et al. and randomly assigned to two separate groups [39]. In the group that was administered magnesium, atrial fibrillation after surgery affected two patients (2%), whereas in the control group, it affected 21 patients (21%) [39]. Thus, it was determined that magnesium supplementation during the period before surgery, as well as during the early phase after surgery, significantly lowers the risk of atrial fibrillation following coronary artery bypass grafting [39]. This research was supported by an experimental study done in Iran in which 160 adult individuals undergoing heart surgery with normal hemodynamics and normal sinus rhythm were studied [40]. The results showed a major difference in the occurrence of all arrhythmias between the magnesium-treated and untreated groups [40]. Table 1 presents the relationship between magnesium supplementation and cardiac arrhythmias, as observed in various studies.

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Relationship Between Dietary Magnesium Intake and Incident Heart Failure Among Older Women: The WHI

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https://pmc.ncbi.nlm.nih.gov/articles/PMC7428611/#jah34976

Potential mechanisms of the association between magnesium intake and HF hospitalizations can be several. Low serum and dietary magnesium have been associated with risk factors of HF, such as coronary disease,[2] left ventricular hypertrophy,[25] insulin resistance,[3] diabetes mellitus,[4] hypertension,[5, 6] and atrial fibrillation[7] which over time could lead to HF. The association between dietary magnesium with HFrEF but not HFpEF in our subgroup analysis is unique and requires further exploration of mechanisms. A 1-time infusion of elemental magnesium has been shown to acutely decreased LV filling pressures,[26] while the long-term effects of magnesium intake on the myocardium is not known. We postulate that the

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effects of magnesium intake on the myocardium is not known. We postulate that the relationship between magnesium intake and HFrEF but not HFpEF may be in part explained by the vascular dilation effects of magnesium,[27] which mirrored the past vasodilator trials with angiotensin-converting enzyme inhibitors,[28] angiotensin receptor blockers,[29] and hydralazine and nitrates[30, 31] and improved outcomes in patients with HFrEF but not HFpEF.[32, 33] Hemodynamically, vasodilation using intravenous nitroprusside improved stroke volume in HFrEF but in much less magnitude in HFpEF.[34] Similarly, isosorbide did not significantly improve 6-minute walk distance or quality of life in participants with HFpEF.[33]

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Based on the US Recommended Daily Allowance of dietary magnesium of 320 mg per day for nonpregnant women >30 years of age, the implications of our study are large, as ≈75% of postmenopausal women in this multicenter, multiracial cohort study have a magnesium intake (median, 272 mg for quartile 3) below Recommended Daily Allowances levels,[10] and our results suggest that a quarter of the postmenopausal women in this cohort are at increased risk of incident HF on the basis of their dietary magnesium intake. Our total magnesium intake analysis, which incorporated magnesium supplements, showed slight attenuation of the association between dietary magnesium and incident HF and could serve as preliminary data to explore how supplemental magnesium intake may attenuate the risk of HF. In addition, the ARIC (Atherosclerosis Risk in Communities) cohort demonstrated that low serum magnesium levels were associated with the development of incident HF.[35] It is plausible that habitually high intake of magnesium may eventually increase serum magnesium levels as a reflection of higher body stores to provide protective effects against HF.[36] Future studies are needed to further explore how magnesium supplementation may relate to HF risk.

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PHARMACOLOGICAL STUDIES ON *GLYCYRRHIZA GLABRA*: A REVIEW

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Summary

https://www.researchgate.net/publication/305386640_Pharmacological_studies_on_Glycyrrhiza_glabra073

Introduction

Liquorice is the root and rhizome of the Glycyrrhiza plant, which belongs to the family Leguminosae. This plant has been recognized worldwide as an important medicinal herb since ancient times [1, 2, 3]. The main taproot, which is harvested for medicinal use, is soft, fibrous, and has a bright yellow interior [4]. Glycyrrhiza is derived from the ancient Greek term *glykos,* meaning sweet, and *rhiza*, meaning root. Glycyrrhizin (GZ) Figure 1, a major component of liquorice (*Glycyrrhiza glabra* L.), is used as a remedy for chronic hepatitis, allergies, and other remedies [5]. It has been reported that liquorice is effective in gastric ulcer treatment [6] and glycyrrhetinic acid, the aglycone of glycyrrhizin, has an anti-inflammatory and antiulcer effect [7]. Liquorice constituents also exhibit anti-arthritic, anti-arrhythmic, antibacterial, antiviral, expectorant [8] and steroid like anti-inflammatory activity, similar to the action of hydrocortisone. This is due, in part, to inhibition of phospholipase A2 activity, an enzyme critical to numerous inflammatory processes [9]. *In vitro* research has also demonstrated glycyrrhizic acid inhibits cyclooxygenase activity and prostaglandin formation (specifically prostaglandin E2), as well as indirectly inhibiting platelet aggregation, all factors in the inflammatory process [9,

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(WORMWOOD)

Effects of artemisinin on ventricular arrhythmias in response to left ventricular afterload increase and microRNA expression profiles in Wistar rats

Xue Xu [1], Qiang Zhang [2], Huanqiu Song [3], Zhuo Ao [2], Xiang Li [2], Cheng Cheng [3], Maojing Shi [3], Fengying Fu [4], Chengtao Sun [5], Yuansheng Liu [3,✉], Dong Han [2,✉]

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For the study, 70 male Wistar rats were randomly divided into seven groups: group 1 was a control group (sham surgery); group 2 was a model group that underwent transverse aortic constriction (TAC) surgery; groups 3, 4, 5 and 6 were administered ART 75, 150, 300 and 600 mg/kg before TAC surgery, respectively; and group 7 was administered verapamil (VER) 1 mg/kg before TAC surgery. A ventricular arrhythmia score (VAS) was calculated to evaluate preventive effects of ART and VER on mechanical VA. The high throughput sequencing-based approach provided DEMs that were altered by ART pretreatment between group 2 and group 4. All predicted mRNAs of DEMs were enriched by gene ontology (GO) and Kyoto Encyclopedia annotation of Genes and Genomes (KEGG) databases. These DEMs were validated by a real time quantitative polymerase chain reaction (RT-qPCR).

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The average VASs of groups 3, 4, 5, 6 and 7 were significantly reduced compared with those of group 2 (2.70 ± 0.48, 1.70 ± 0.95, 2.80 ± 0.79, 2.60 ± 0.97, 1.40 ± 0.52, vs 3.70 ±

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rno-miR-204-5p showed high expression levels validated by RT-qPCR.

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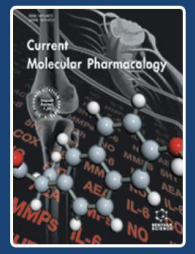

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Research Article

(WORMWOOD)

Extracts from *Artemisia annua* Alleviates Myocardial Remodeling through TGF-β1/Smad2/3 Pathway and NLRP3 Inflammasome

Author(s): Zizhe Ma, Zhenzhou Bai, Bohan Li, Yue Zhang* and Wei Liu*

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Methods: Isoproterenol was injected subcutaneously for induction of the cardiac fibrosis model. Proteomic analysis was performed after 4 four weeks of artemisinin treatment. Echocardiography was used to evaluate cardiac function and structure. Hematoxylin and eosin (H&E) staining, as well as Masson trichrome staining, were performed for histopathology. The α-SMA, collagen I, and III expression in the myocardium was detected by immunohistochemical staining. The ratio of heart weight to body weight (HW/BW, mg/kg) and the ratio of heart weight to tibia length (HW/TL, mg/mm) were calculated as indicators for cardiac remodeling. Brain natriuretic peptide (BNP) levels were quantified in rat plasma using enzymelinked immunosorbent assay (ELISA). In contrast, the protein levels of TGF-β1, p-Smad2/3, and Smad2/3 were assessed in the myocardium and fibroblasts via western blot analysis. RT-qPCR was performed to analysis the expression of Col-I, Col-III, α-SMA, NLRP3, Caspase-1, IL-1β, and IL-18.

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Results: Proteomic analysis identified 227 differentially expressed proteins (DEPs), including 119 upregulated and 108 downregulated proteins. These proteins were identified as the core proteins targeted by artemisinin for improving myocardial remodeling. GO annotation of the DEPs indicated that the DEPs were mainly associated with biological processes such as inflammation regulation. In the *in vivo* study of an isoproterenol-induced rat cardiac remodeling model, we found that artemisinin administration significantly ameliorated cardiac dysfunction and reduced collagen production by suppressing TGFβ-1/Smads signaling and inhibiting NLRP3 inflammasome activation. As manifested by downregulating the expression of α-SMA, Col-I, and Col-III, NLRP3, IL-1β, IL-18, Caspase-1 mRNA, and TGF-β1, p-SMAD 2/3 protein in the myocardium. Similar beneficial effects of artemisinin were consistently observed in TGFβ1 treated primary cardiac fibroblasts.

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CONCLUSION

This study validated that artemisinin attenuates ISO-induced myocardial fibrosis and improves cardiac dysfunction. This effect is related to inhibiting the TGF-β/Smad2/3 pathway and the NLRP3 inflammasome. Our findings can be exploited clinically to pave the way for artemisinin-based combination therapies for the future treatment of heart failure.

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Beneficial effects of cinnamon and its extracts in the management of cardiovascular diseases and diabetes

Chang Shang [1 2], Hongchen Lin [1 2], Xuqin Fang [1 2], Yuling Wang [1 2], Zhilin Jiang [1], Yi Qu [1 2], Mi Xiang [1], Zihuan Shen [1 2], Laiyun Xin [1 3], Yingdong Lu [1], Jialiang Gao [1], Xiangning Cui [1]

Affiliations + expand

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https://pubmed.ncbi.nlm.nih.gov/34752593/

Abstract

Cardiovascular diseases (CVDs) and diabetes are the leading causes of death worldwide, which underlines the urgent necessity to develop new pharmacotherapies. Cinnamon has been an eminent component of spice and traditional Chinese medicine for thousands of years. Numerous lines of findings have elucidated that cinnamon has beneficial effects against CVDs in various ways, including endothelium protection, regulation of immune response, lowering blood lipids, antioxidative properties, anti-inflammatory properties, suppression of vascular smooth muscle cell (VSMC) growth and mobilization, repression of platelet activity and thrombosis and inhibition of angiogenesis. Furthermore, emerging evidence has established that cinnamon improves diabetes, a crucial risk factor for CVDs, by enhancing insulin sensitivity and insulin secretion; regulating the enzyme activity involved in glucose; regulating glucose metabolism in the liver, adipose tissue and muscle; ameliorating oxidative stress and inflammation to protect islet cells; and improving diabetes complications. In this review, we summarized the mechanisms by which cinnamon regulates CVDs and diabetes in order to provide a theoretical basis for the further clinical application of cinnamon.

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October 27, 2020 by Donna

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OPEN

Dose-dependent protective effect of nicotine in a murine model of viral myocarditis induced by coxsackievirus B3

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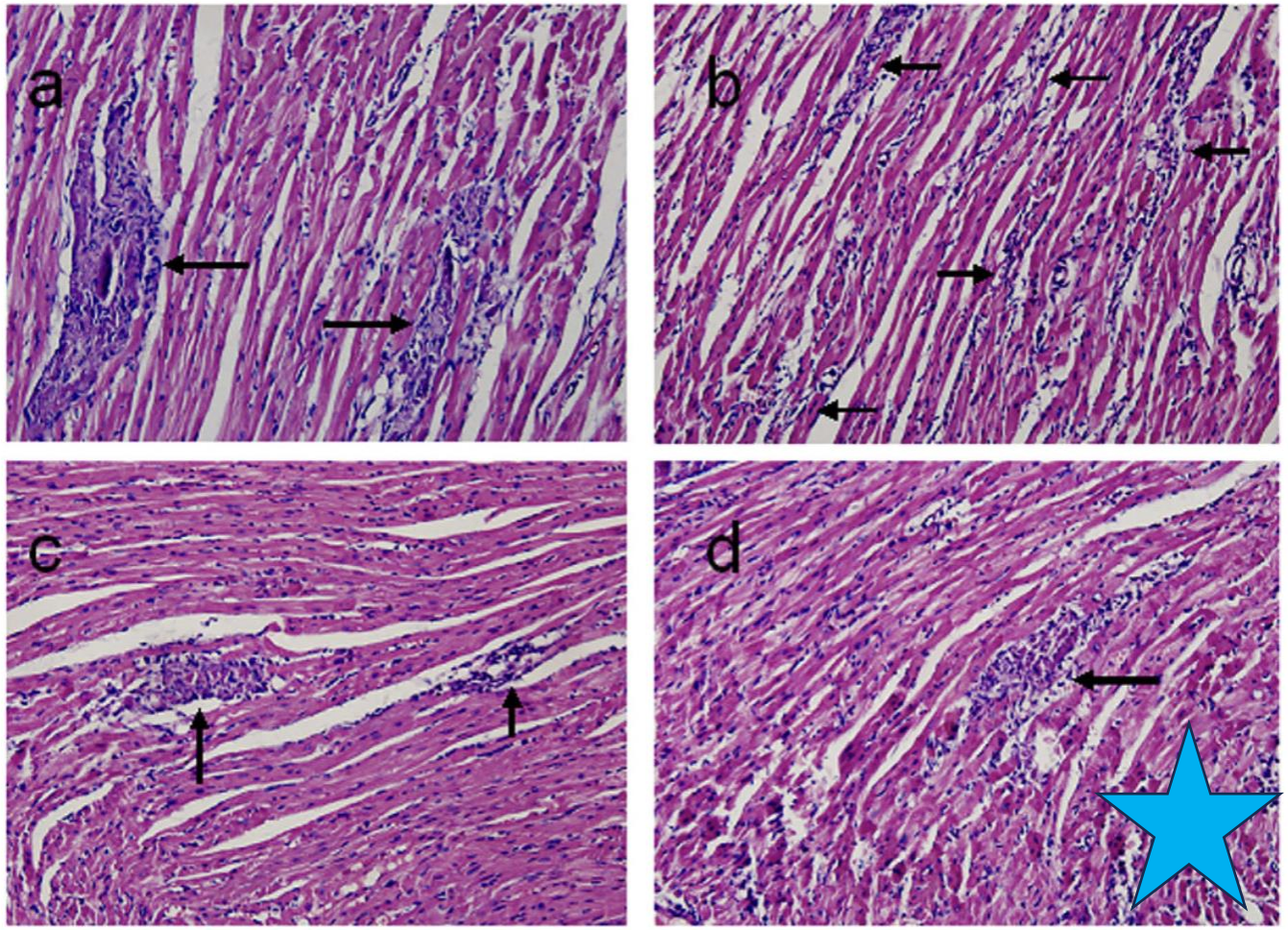

Figure 1. Histopathology in the heart on day 7 (Hematoxylin Eosin × 200). (**A**) Representative histopathology of the myocarditis group. There are two large foci of inflammatory cellular infiltration (arrow) found in the region (Infiltration score: 2.5; Necrosis score: 1.8). (**B**) Representative histopathology of the mice treated with 0.1 mg/kg nicotine. There are several small foci of inflammatory cellular infiltration (arrow) found in the region (Infiltration score: 2.1; Necrosis score: 1.5). (**C**) Representative histopathology of the mice treated with 0.2 mg/kg nicotine. There are two small foci of inflammatory cellular infiltration (arrow) found in the region (Infiltration score: 1.4; Necrosis score:1.2). (**D**) Representative histopathology of the mice treated with 0.4 mg/kg nicotin. There is a small foci of inflammatory cellular infiltration (arrow) found in the region (Infiltration score: 1.2; Necrosis score: 0.9).

when administered for up to 7 days, which indicates a dose-dependent effect of nicotine treatment. These data show that the short-term activation of alpha7 nAChRs is sufficient to halt the progression of myocarditis when the nicotine concentration is sufficiently high. To the best of our knowledge, this is the first study to investigate the dose-related anti-inflammatory effects of nicotine in viral myocarditis.

nAChR agonists dose-dependently inhibit inflammation via the cholinergic anti-inflammatory pathway. Our results indicate that stimulation of alpha7 nAChRs with nicotine treatment dose-dependently improved survival, reduced myocardial inflammation and improved the impairment of left ventricular function of mice infected by CVB3.

INTERNATIONAL JOURNAL OF APPLIED SCIENCE RESEARCH

FEDERAL POLYTECHNIC OKO, ANAMBRA STATE

Phytochemical Properties, Pharmacological Activities and Ethnomedicinal Uses of *Nicotiana tabacum* L.-A Comprehensive Review.

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Abstract

Nicotiana tabacum L. (tobacco) is a popular plant in human history and economy and it is a notable fumitory plant. Tobacco products include cigarettes, cigars, chewing tobacco, snuff, and loose pipe tobacco. All forms of tobacco contain the pyridine alkaloid, nicotine which is an extremely addictive drug that can act as both central nervous system stimulant and depressant. In addition to the alkaloid nicotine, tobacco contain other major phytochemicals such as flavonoid, tannins, saponins, terpenoids, cardiac glycosides, phenols, steroids, polypeptides, resins etc. These bioactive substances have a number of biological activities including antimicrobial, antibacterial, antifungal, antiviral, antioxidant, anthelmintic, antinociceptive, anti-Alzheimer's, peripheral nervous system activities, central nervous system and cardiovascular system activities. Various parts of *Nicotiana tabacum* such as roots, stem, leaves, flowers, fruits, and seeds are used in traditional medicine in the treatment of various human ailments such as skin diseases, bronchitis, asthma, ulcers, piles, worms, dysmenorrhea, constipation, gastrointestinal disorders, hydrocele, arthralgia, gout, lumbago etc. Therefore, the aim of this article is to comprehensively review the phytochemical properties, pharmacological activities and the ethnomedicinal uses of *Nicotiana tabacum* L.(tobacco) reported worldwide prior to end of 2020 .

Keywords: Photochemistry, Pharmacology, Ethnomedicine, Nicotine, Tobacco

Introduction

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Overview

What are cardiac glycosides?

Cardiac glycosides are medicines that can help people with certain heart conditions. You take them as either a tablet, liquid or capsule. People usually take it once a day at the same time of day.

https://my.clevelandclinic.org/health/treatments/24512-cardiac-glycosides

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Cardiac glycosides are medicines that help your heart muscle have stronger contractions. They also slow down how quickly your heart beats when you have certain heart conditions.

Researchers are exploring the use of cardiac glycosides to keep several types of cancer cells from multiplying. If research proves that this can work, it can have an impact on various kinds of cancer. It could provide new treatments for many people.

What do cardiac glycosides treat?

Cardiac glycosides treat several heart issues:

- **Heart failure**. Healthcare providers have used digoxin for heart failure for 200 years.
- **Atrial fibrillation**. Providers have prescribed digoxin for atrial fibrillation for more than 50 years.

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Nicotiana tabacum L. (tobacco) is a popular plant in human history and economy and it is a notable fumitory plant. Tobacco products include cigarettes, cigars, chewing tobacco, snuff, and loose pipe tobacco. All forms of tobacco contain the pyridine alkaloid, nicotine which is an extremely addictive drug that can act as both central nervous system stimulant and depressant. In addition to the alkaloid nicotine, tobacco contain other major phytochemicals such as flavonoid, tannins, saponins, terpenoids, cardiac glycosides, phenols, steroids, polypeptides, resins etc. These bioactive substances have a number of biological activities including antimicrobial, antibacterial, antifungal, antiviral, antioxidant, anthelmintic, antinociceptive, anti-Alzheimer's, peripheral nervous system activities, central nervous system and cardiovascular system activities. Various parts of *Nicotiana tabacum* such as roots, stem, leaves, flowers, fruits, and seeds are used in traditional medicine in the treatment of various human ailments such as skin diseases, bronchitis, asthma, ulcers, piles, worms, dysmenorrhea, constipation, gastrointestinal disorders, hydrocele, arthralgia, gout, lumbago etc. Therefore, the aim of this article is to comprehensively review the phytochemical properties, pharmacological activities and the ethnomedicinal uses of *Nicotiana tabacum* L.(tobacco) reported worldwide prior to end of 2020 .

Keywords: Photochemistry, Pharmacology, Ethnomedicine, Nicotine, Tobacco

Introduction

https://injasr.org/Aug2021/Phytochemical%20Properties,%20Pharmacological%20Activities%20and%20Ethnomedicinal%20Uses%20of%20Nicotiana%20tabacum%20L.-A%20Comprehensive%20Review..pdf

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If You Know Someone Who Has Been Diagnosed With MyoCarditis or Atrial Fibrillation,

"Ask Your Cardiologist if

NICOTINE PATCHES

Are Right For You?"

(Then Show Them This Study)

https://pubmed.ncbi.nlm.nih.gov/26507386/

Supplement Facts

Serving Size: 2 Capsules Servings Per Container: 90

Amount Per Serving		% Daily Value
Guggul Extract (Std. to 2.5% Guggulsterones)	300mg	†
Bromelain	200mg	†
L-Methionine	200mg	†
L-Cysteine	200mg	†
Cilantro Leaf Powder	200mg	†
Butchers Broom Extract (Rhizome)	100mg	†
Indian Elecampane Extract 0.5% (Root)	76mg	†
Arjuna Bark Extract (Std. to 0.5% Arjunolic Acid)	50mg	†
Bacopa Leaf Extract (Std. to 20% Bacosides)	50mg	†
Papain (525 TU/mg)	20mg	†
L-Glutathione	14mg	†

*Percent Daily Value (DV) are based on a 2000 calorie diet.
†Daily Value (DV) not established.

OTHER INGREDIENTS: Vegetable Capsule (HPMC).

Nature Wins Cardio-Flow (180 Count)

Nature Wins SKU: CARDIO001--listing

$55.99

★★★★★ (6 reviews) + Write a Review

SIZE: *

1 Bottle
$55.99

3.00%
3 Bottles
$162.93

5.00%
6 Bottles
$319.14

https://thedrardisshow.com/

nature WINS

www.thedrardisshow.com

THE dr.ardis SHOW

Supplement Facts

Serving Size: 1 Capsules Servings Per Container: 30

Amount Per Serving		% Daily Value
Calories	5	
Total Carbohydrates	1g	<1%*
Guggulsterone (as Guggul Resin Extract)	70mg	†

*Percent Daily Value (DV) are based on a 2000 calorie diet.
†Daily Value (DV) not established.

OTHER INGREDIENTS: Cellulose (Capsule), Rice Flour

Nature Wins Guggul Resin (30 Count)

Nature Wins SKU: GUGGUL001--listing

$22.99

★★★★★ (4 reviews) + Write a Review

SIZE: *

1 Bottle

3 Bottles

6 Bottles

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Supplement Facts

Serving Size: 1 ml
Servings Per Container: About 60

	Amount Per Serving
Proprietary Blend	1 ml*

Wildcrafted Lobelia, Organic Licorice, Wildcrafted Wormwood, Cinnamon Cassia, Mucuna Extract, Organic Lemon Balm, Turmeric C02 Extract, Citicoline, Supercharged C60, Cu1 (cuprous nicotinic acid), Super Concentrated Liquid Gold

*Daily Value (DV) not established

Other Ingredients: organic vegetable glycerin, triple-distilled biophotonic structured water, organic ice pressed olive oil, organic avocado oil

Foreign Protein Cleanse (2oz)

SKU: FOREIGN001

$46.95

★★★★★ (90 reviews) + Write a Review

SIZE: *

1 Bottle	3 Bottles (3.00%)
$46.95	$136.63
6 Bottles (5.00%)	
$267.62	

https://thedrardisshow.com/

Supplement Facts

Serving Size: 4 Capsules Servings Per Container: 30

Amount Per Serving		% Daily Value
Magnesium (as magnesium citrate, magnesium aspartate, and magnesium malate)	400mg	95%*

*Percent Daily Value (DV) are based on a 2000 calorie diet.
†Daily Value (DV) not established.

OTHER INGREDIENTS: Hydroxypropyl Methylcellulose (Capsule), Vegetable Stearate

Nature Wins Magnesium Complex (120 Count)

Nature Wins SKU: MAGCOMPLEX001--listing

$29.99

★★★★★ (49 reviews) + Write a Review

SIZE: *

1 Bottle	3.00% 3 Bottles
$29.99	$87.27
4.47% 6 Bottles	
$170.94	

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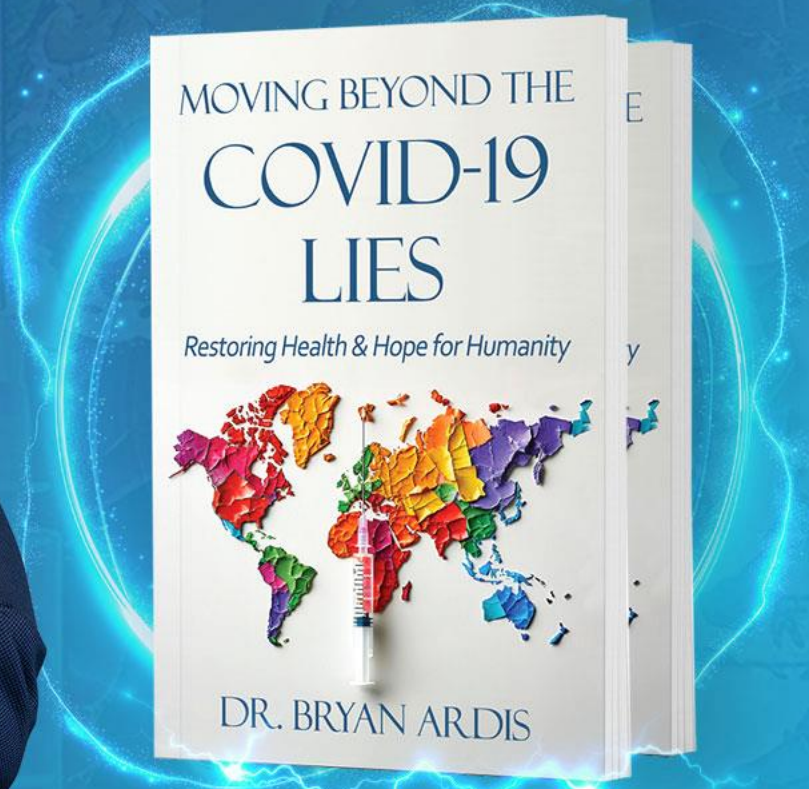
MOVING BEYOND THE COVID-19 LIES



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