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To Brife Study Of Antiasthematic Drugs

Rathod Payal,Prof,Raut P.M,And Dr.Santosh Jain
Aditya Institute Of Pharmaceutical Beed,
Dr.Babasaheb AmbedkarTechnological University Lonere.

Abstract—Asthma is a common chronic lung disease in which the airways (bronchi) become inflamed and are abnormally sensitive to certain triggers. Asthma can affect people of all races and ages, and although there is no known cure, there are many ways to control it. The symptoms of asthma include coughing, shortness of breath, wheezing and chest tightness.

There are two related changes that take place in the airways of a person with asthma. First, the lining of the airways becomes inflamed and swollen, and produces excess mucus. Second, the muscles around these over-sensitive airways start to spasm, causing them to constrict. These changes that cause the airways to narrow, make it difficult to breathe. With proper asthma management, this can generally be reversed so that breathing becomes, and stays, normal. Things that can make asthma worse vary from person to person.

They can be organized into two groups: allergic triggers and non-allergic triggers. The most common allergic triggers include animal allergens, dust mites, pollens, moulds, cockroaches and sometimes food. Non-allergic triggers include tobacco smoke, colds and chest infections, extreme temperatures and weather changes, exercise, fumes, and even emotional responses such as stress, exciteme nt and fear. ASA and other medications can also trigger asthma symptoms.

INTRODUCTION:-

We have now evolved highly effective drugs for the management of asthma that have led to a marked reduction in hospital admissions and mortality for this increasingly common disease. Most patients with asthma are now able to lead a normal life through the use of medications that are virtually free of side effects. Indeed, current therapies are so effective that it has so far been proved impossible to develop any new classes of drug that are more effective than existing agents. The advances in asthma therapy have been largely through improving the selectivity and duration of action of existing effective classes of drugs. With respect to this, pharmacology has played an important role in validating drug targets and drug design. Pharmacology, particularly through the use of selective agonists and antagonists, has also played an important role in increasing our understanding of the underlying inflammatory mechanisms of asthma, providing a rational basis for the use of current drug therapy. The history of asthma treatment goes back to thousands of years, but most of the important advances have been made during the last 75 years. As indicated in

pharmacology, which evolved and has always been very strong in the U.K., has played a particularly important role in the development of bronchodilators and British pharmaceutical companies have played (and continue to play) a leading role in the development of asthma medications, supported by strong interactions with basic and clinical pharmacologists.

It is of interest that many of our effective therapies for asthma were originally derived from natural substances. Many were isolated from plants through the discovery of herbal remedies, including atropine, dietary xanthines such as theophylline and chromones from a Mediterranean medicinal herb. The most effective treatments for asthma are derived from hormones, β-adrenoceptor agonists from adrenaline and corticosteroids from cortisone, both secreted by the adrenal gland. Indeed, the most effective therapies available for asthma so far are combination inhalers containing a longacting β-agonist and a corticosteroid.

LITERATURE REVIEW

Determining which is suitable for, and which patient can benefit from, a once- daily dose of prophylactic treatment is important for practitioners who want to improve therapeutic compliance in children with asthma. According to the literature, once-daily delivery of cromolyn sodium, nedocromil or

beclomethasone dipropionate must be avoided. On the other hand, switching from a twice-daily to a once-daily regimen is efficient and safe only in children with well-controlled asthma using nebulized or dry-powder budesonide, dry-powder fluticasone propionate, flunisolide, or sustained-release theophylline. Such information is not available for long-acting beta2-agonists, except for oral bamubutarol. Intiating a once-daily treatment in previously untreated children can only be based on low doses of inhaled budesonide or on an oral drug, montelukast. Further studies in children with severe asthma or treated with metered-dose inhalers and spacer devices are required before recommending a once-daily drug delivery in such situations.

AIM OF ANTIASTHAMATIC DRUGS :-

To relieve acute episodic attacks of asthma (bronchodilators, quick relief medications)

To reduce the frequency of attacks, and nocturnal awakenings (anti-inflammatory drugs, prophylactic or control therapy)

OBJECTIVE OF ANTIASTHMATIC DRUGS :-

Clinical uses

Chronic use of inhaled corticosteroids

Reduces symptoms and improves pulmonary function in mild asthma

Reduces or eliminates the use of oral corticosteroids in severe asthma

Caution

Enhaled corticosteroids are effective only so long as they are taken

PLAN OF WORK

Your asthma action plan should include:

Factors that make your asthma worse, “asthma triggers”

Medicines you take to treat your asthma with specific names of each medicine

Symptoms or peak flow measurements that indicate worsening asthma

Medicines to take based on your signs, symptoms or peak flow measurements

Symptoms or peak flow measurements that indicate the need for urgent medical attention

Telephone numbers for an emergency contact, your healthcare provider, and your local hospital.

Peak Flow Rate :- Your healthcare provider may want you to use peak flow monitoring. Especially if you have moderate to severe asthma. Your peak flow rate can show if your asthma is getting worse, even before you feel symptoms. Your peak flow meter. To use your peak flow rate to determine the zones on your asthma action plan, you first need to spend some time determining your personal best is the highest peak flow number you acihive in a two- to three- week period.

Asthma is characterized by:-

Airway inflammation: The airway lining becomes red, swollen, and narrow.

Airway obstruction: The muscles encircling the airway tighten causing the airway to narrow making it difficult to get air in and out of the lungs.

Airway hyper-responsiveness: The muscles encircling the airway respond more quickly and vigorously to small amounts of allergens and irritants.

SYMPTOMS OF ASTHMA :-

Common symptoms of asthma include:

Cough—often dry and can have harsh bursts

Wheezing—a whistling sound mainly when you breathe out through narrowed airways

Chest tightness

Shortness of breath which may occur with activity or even at rest

When you are having a problem with asthma, you may feel like you are breathing through a straw because it is hard to move air through your narrowed airways. Cough is often a first symptom of an asthma problem. Cough most often occurs at night or early in the morning.

While asthma is a chronic disease, you may not have symptoms every day. You may have days with cough, wheeze and/or shortness of breath and other days when you feel completely fine. If you have symptoms often and/ or they are interfering with your activities, you should talk to your healthcare provider.

An “asthma attack” means rapid and severe worsening of your asthma. If you think you are having an asthma attack, follow the emergency (red zone) Action Plan that you developed with your healthcare provider. If you are not getting better, or getting worse, you should immediately seek emergency care.

Diagnosing Asthma Asthma is usually suspected by a healthcare provider based on a pattern of symptoms and response to medicine called a bronchodilator that can relief the squeezing of the muscles around the airways. In people over 5 years of age, a breathing test called spirometry (a type of pulmonary function test–PFT) helps confirm the diagnosis. This test can detect narrowing (obstruction) in the airways. A normal breathing test result does not mean you do not have asthma. Your healthcare provider may recommend other types of testing to look for asthma. For more information about pulmonary function testing, see ATS Patient Information series. If you have been diagnosed with asthma, but it is not getting better with treatment, you might benefit from seeing an asthma specialist. Sometimes asthma can be difficult to control. At times, other medical problems can make asthma worse or harder to control. Based on your symptoms, your healthcare provider may suggest testing for other problems, such as allergies, sinus disease, vocal cord dysfunction (VCD), inspiratory laryngeal obstruction (ILO), gastric reflux (heartburn), or heart problems. Work with your healthcare provider to get the tests and treatment you need to be sure you have good asthma control which can improve your quality of life.

Triggers asthma symptoms:-

If you have asthma, your airways are more sensitive than normal. Your airways can get irritated easily when exposed to a variety of things, called "triggers." Exposure to triggers can lead to both muscle spasm and inflammation/swelling described above. Sometimes asthma symptoms occur right away after you are exposed. Sometimes your symptoms may occur hours later. You have to be a detective and think about what may be around you that can trigger your asthma. Knowing and avoiding your triggers can help with asthma control. There may be some triggers that you cannot avoid or control and may need treatment to keep them from causing asthma symptoms. Some common triggers of asthma include allergies, respiratory infections, stress, exercise, and medications.

Allergies:-

Allergies are reactions of your immune system as it responds to things in the environment (allergens) that often do not cause most people harm. Having allergies can run in families (be inherited). You may have any or all of these reactions with exposure to allergens:

- skin rashes (eczema or hives)
- nose and sinus problems (rhinitis)
- eye irritation (conjunctivitis)
- asthma symptoms
- severe reaction (anaphylaxis)

Symptoms of nasal allergies include sneezing, itching, runny nose, postnasal drip into the back of your throat, or nasal congestion. If you have nasal allergy problems that are not well controlled, this can also worsen asthma control. If you have allergies, you may be more likely to have asthma. Common allergens include:

- Pollen from weeds, trees, grasses
- Molds
- Cat or dog
- Dust mites and cockroaches

Irritants

Irritants are things that can irritate the airways and cause asthma symptoms.

These are different from allergies. Examples of airway irritants include:

- Dust particles
- Weather changes
- Outdoor air pollution including ozone, smog, and exhaust fumes
- Chemicals, such as pest control sprays or indoor cleaning products
- Odors from paint, hair spray, perfume or cologne
- Smoke or vapors from cigarettes, cigars, electronic cigarettes, marijuana, hookahs, and pipes

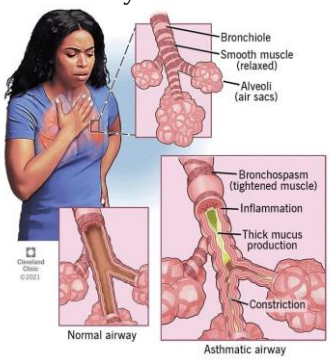
Respiratory infections

Lung or sinus infections are the leading cause of asthmarelated hospitalizations. They are also the most common reason people with asthma miss school and work. Infections can trigger longer episodes of wheezing and shortness of breath. If you get a respiratory infection, follow your action plan and seek medical care if your asthma symptoms are getting worse.

Other common triggers:-

It is important to recognize when these are present, and note how they may affect you:

- Stress—Talk to your healthcare provider about things that cause you stress and learn stress relieving.



TYPES OF ASTHMA:-

Asthma occurs in different patterns. Different types of asthma are classified by their temporal pattern, or the time when attacks occur and the following forms have been identified:

1) Intermittent asthma:-

In some people episodes of asthma occur between intervening symptomfree periods. In most cases, the asthmatic symptoms resolve spontaneously. The symptom-free periods are usually quite long. In such patients viral infections of the respiratory tract such as those which cause the common cold are a common trigger of asthma symptoms. This is especially true in small children between 2-5 years of age who may get 8-12 viral colds and coughs a year. In other cases, strenuous exercise or physical activity, exposure to cold air, or certain environmental agents have been found to act as asthma triggers.

2) Seasonal allergic asthma:-

Seasonal allergic asthma has been observed in response to the seasonal release of allergens such as pollens that occur in the environment. Mold spores are another common cause of seasonal asthma. It is important to understand how your local climate and air allergen level vary from season to season to determine whether you have this type of asthma is, and to prevent it by appropriate measures.

3) Non-seasonal allergic asthma:-

Everyone with allergies do not necessarily develop asthma, neither do all asthmatics have allergies. However, allergies do intensify asthma in some cases. Thus, exposure to cold or dry air, dust, pet hair or pollen may set off an acute attack of asthma. In addition, there is another type of allergic asthma in which the asthma triggers are not related to season, but may be due to a hyper-reaction of the airway mucosa to things that are not typically allergenic. These include viruses, air pollutants or irritants like tobacco smoke or paint fumes, heavy exercise, certain chemicals in food or drugs, and changes in the weather.

4) Exercise-induced bronchoconstriction (EIB):-

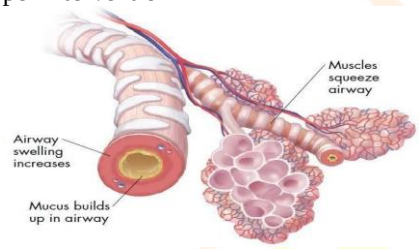
This term is used when a bout of exercise is followed by narrowing of the airways. It may be found in up to 80% of people with asthma. However, not all cases of EIB are found in asthma patients. It

is thought to be caused by the dehydration and/or heating up that occurs with strenuous physical activity in a dry climate. In children with asthma it is often the first symptom to develop.

Certain irritants which are encountered during the course of various sport activities include chlorine in swimming pools, air pollutants while jogging, running or cycling, cold dry air during winter sports, and strong smells due to chemicals or perfumes in a gym environment. The transient and treatable nature of EIB, means that patients with this condition should not be prevented from physical activity at any level whatsoever, provided it is properly managed.

5) Chronic asthma:-

Also called persistent asthma, this condition is defined by daily symptoms or those which recur several times a week. The intensity of symptoms may be quite variable, but there are no long periods without symptoms. Acute exacerbations may supervene at any time upon the chronic course of the disease. These may be traced in some cases to seasonal increase in air allergens or viral pathogens that provoke airway inflammation. Chronic asthma must be correctly identified in a patient to ensure proper intervention



strategies.

6) Adult-onset asthma:-

Most cases of asthma begin in childhood, but in some patients, the first symptoms appear only in adult life. The causes may be many. Some people were just not exposed to potential triggers for their asthma until they became adults. For example, they are exposed to a house pet when their room-mate brings one home, or they begin to work in an environment containing chemical fumes, that triggers their latent hypersensitivity. It could even be a viral infection that sets off an asthmatic reaction for the first time in adulthood.

7) Childhood Asthma:-

Asthma onset in children usually occurs before their fifth birthday. The majority of children with asthma are sensitive to household allergens and irritants, and they can benefit from a smoke-free, dust-free and pet-free environment. When someone has asthma, they usually have it for life. However, asthma usually gets better as a child gets older and there are often periods where there are no symptoms, such as during adolescence.

8) Occupational Asthma:-

Occupational asthma is caused by exposure to certain irritants in the workplace. There are more than 200 substances including gases, dust particles and chemicals that are known to cause asthma in the workplace. Adequate ventilation, proper masks, protective clothing and changes in work practices, such as using different chemicals, can reduce the risk of developing occupational asthma.

CAUSES OF ASTHMA:-

Scientists continue to explore what causes asthma, but we do know that these factors play an important role in the development of asthma:

1. Family history:-

If you have a parent with asthma, you are three to six times more likely to develop asthma than someone who does not have a parent with asthma.

2. Allergies:-

Some people are more likely to develop allergies than others, especially if one of their parents has allergies. Certain allergic conditions, such as atopic dermatitis (eczema) or allergic rhinitis (hay fever), are linked to people who get asthma.

3. Viral respiratory infections:-

Respiratory problems during infancy and childhood can cause wheezing. Some children who experience viral respiratory infections go on to develop chronic asthma.

4. Occupational exposures:-

If you have asthma, exposures to certain elements in the workplace can cause asthma symptoms. And, for some people, exposure to certain dusts (industrial or wood dusts), chemical fumes and vapors, and molds can cause asthma to develop for the very first time.

5. Smoking:-

Cigarette smoke irritates the airways. Smokers have a high risk of asthma. Those whose mothers smoked during pregnancy or who were exposed to secondhand smoke are also more likely to have asthma. Learn more about the health effects of smoking with asthma.

6. Air Pollution:-

Exposure to the main component of smog (ozone) raises the risk for asthma. Those who grew up or live in urban areas have a higher risk for asthma.

7. Obesity:-

Children and adults who are overweight or obese are at a greater risk of asthma. Although the reasons are unclear, some experts point to low-grade inflammation in the body that occurs with extra weight. Obese patients often use more medications, suffer worse symptoms and are less able to control their asthma than patients in a healthy weight range.

While these factors increase a person's risk for developing the disease, there are additional factors, such as poverty and lack of health insurance, that contribute to more asthma symptoms, emergency room visits and hospitalizations. Learn more about ways to improve asthma by understanding the risks related to exposure to things in the environment

TREATMENT OF ASTAMA :-

Bronchodilators:

These medicines relax the muscles around your airways. The relaxed muscles let the airways move air. They also let mucus move more easily through the airways. These medicines relieve your symptoms when they happen and are used for intermittent and chronic asthma.

Anti-inflammatory medicines:-

These medicines reduce swelling and mucus production in your airways. They make it easier for air to enter and exit your lungs. Your healthcare provider may prescribe them to take every day to control or prevent your symptoms of chronic asthma.

Biologic therapies for asthma:-

These are used for severe asthma when symptoms persist despite proper inhaler therapy.

You can take asthma medicines in several different ways. You may breathe in the medicines using a metered-dose inhaler, nebulizer or another type of asthma inhaler. Your healthcare provider may prescribe oral medications that you swallow.

There's currently no cure for asthma, but treatment can help control the symptoms so you're able to live a normal, active life. Inhalers, which are devices that let you breathe in medicine, are the main treatment. Tablets and other treatments may also be needed if your asthma is severe. You'll usually create a personal action plan with a doctor or asthma nurse. This includes information about your medicines, how to monitor your condition and what to do if you **have an asthma attack.**

Inhalers:-

Inhalers can help:

relieve symptoms when they occur (reliever inhalers)

stop symptoms developing (preventer inhalers)

Some people need an inhaler that does both (combination inhalers).

1. Reliever inhalers:-

Most people with asthma will be given a reliever inhaler.

These are usually blue.

You use a reliever inhaler to treat your symptoms when they occur. They should relieve your symptoms within a few minutes.

Tell a GP or asthma nurse if you have to use your reliever inhaler 3 or more times a week. They may suggest additional treatment, such as a preventer inhaler.

Reliever inhalers have few side effects, but they can sometimes cause shaking or a fast heartbeat for a few minutes after they're used.

2. Preventer inhalers:-

If you need to use a reliever inhaler often, you may also need a preventer inhaler. You use a preventer inhaler every day to reduce the inflammation and sensitivity of your airways, which stops your symptoms occurring. It's important to use it even when you do not have symptoms.

Speak to a GP or asthma nurse if you continue to have symptoms while using a preventer inhaler.

Preventer inhalers contain steroid medicine.

They do not usually have side effects, but can sometimes cause:

a fungal infection of the mouth or throat (oral thrush)

a hoarse voice

a sore throat

You can help prevent these side effects by using a spacer, which is a hollow plastic tube you attach to your inhaler, as well as by rinsing your mouth after using your inhaler.

3. Combination inhalers:-

If using reliever and preventer inhalers does not control your asthma, you may need an inhaler that combines both.

Combination inhalers are used every day to help stop symptoms occurring and provide long-lasting relief if they do occur.

It's important to use it regularly, even if you do not have symptoms.

Side effects of combination inhalers are similar to those of reliever and preventer inhalers.

TABLETS:-

You may also need to take tablets if using an inhaler alone is not helping control your symptoms.

1. Leukotriene receptor antagonists (LTRAs):-

LTRAs are the main tablets used for asthma. They also come in syrup and powder form.

You take them every day to help stop your symptoms occurring.

Possible side effects include tummy aches and headaches.

Types of LTRAs:-

Montelukast

Zafirlukast

Zileuton

 Montelukast:-

 Side Effect:-

Body aches or pain.

difficulty in breathing.

dryness or soreness of the throat.

headache.

pain, redness, or swelling in the ear.

stomach pain.

tender, swollen glands in neck.

trouble in swallowing.

Zafirlukast

It works by blocking the action of certain natural substances that cause swelling and tightening of the airways.

Zafirlukast is used to prevent asthma attacks. It is not used to relieve an attack that has already started. For relief of an asthma attack that has already started, you should use an inhaled medicine that works quickly.

 Side Effect:-

Tenderness in the upper stomach
Pale stools
dark urine
loss of appetite
Nausea
Unusual tiredness or weakness Yellow eyes or skin.

 Zileuton:-

Zileuton is used to prevent wheezing, shortness of breath, coughing, and chest tightness due to asthma. Zileuton is not used to treat an asthma attack (sudden episode of shortness of breath, wheezing, and coughing) that has already started

Zileuton is used by patients with mild-to-moderate chronic asthma to decrease the symptoms of asthma and the number of acute asthma attacks. However, this medicine should not be taken to relieve an asthma attack that has already started.

Side Effect:-

Headache.
Heartburn.
Diarrhea.
Muscle pain.
Nose and throat irritation.
Pain or fullness in the face.

Theophylline:-

Theophylline may also be recommended if other treatments are not helping to control your symptoms.

It's taken every day to stop your symptoms occurring.

Possible side effects include headaches and feeling sick.

Steroid tablets:-

Steroid tablets may be recommended if other treatments are not helping to control your symptoms.

They can be taken either:as an immediate treatment when you have an asthma attack every day as a long-term treatment to prevent symptoms – this is usually only necessary if you have very severe asthma and inhalers do not control your symptoms

Long-term or frequent use of steroid tablets can occasionally cause side effects such as:

increased appetite, leading to weight gain
easy bruising
mood changes
fragile bones (osteoporosis)
high blood pressure

You'll be monitored regularly while taking steroid tablets to check for signs of any problems.

Injections:-

For some people with severe asthma, injections given every few weeks can help control the symptoms.

The main injections for asthma are:

1. Benralizumab (Fasenra)
2. Omalizumab (Xolair)
3. Mepolizumab (Nucala)
4. Reslizumab (Cinqaero)

These medicines are known as biologic therapies. They are not suitable for everyone with asthma and can only be prescribed by an asthma specialist.

The main side effect is discomfort where the injection is given.

Omalizumab (Xolair)
Reslizumab (Cinqaero)

Surgery:-

A procedure called bronchial thermoplasty may be offered as a treatment for severe asthma. It works well and there are no serious concerns about its safety.

You will be sedated or put to sleep using a general anaesthetic during a bronchial thermoplasty.

It involves passing a thin, flexible tube down your throat and into your lungs. Heat is then used on the muscles around the airways to help stop them narrowing and causing asthma symptoms.

Complementary therapies:-

Several complementary therapies have been suggested as possible treatments for asthma, including:

breathing exercises – such as techniques called the Papworth method and the Buteyko method
traditional Chinese herbal medicine
acupuncture
ionisers – devices that use an electric current to charge molecules of air
manual therapies – such as chiropractic
homeopathy
dietary supplements

There's little evidence to suggest many of these treatments help.

There's some evidence that breathing exercises can improve symptoms and reduce the need for reliever medicines in some people, but they should not be used instead of your medicine.

NATURAL METHOD FOR TREATMENT OF ASTHMA :-

1. Ginger :-

People suffering from malaria may experience symptoms like nausea and vomiting. Several clinical studies show that ginger may be effective against these symptoms.

Ginger tea is a famous recipe effective in many conditions. You can make ginger tea by boiling some freshly crushed ginger with a glass of water. Ginger tea goes well with some lemon juice or a spoonful of honey.

Ginger tea is an herbal tea made with fresh ginger and boiling water. You can add fresh lemon juice, sweeteners, or cinnamon sticks to inger tea, which has a long history throughout Asia as a medicinal beverage. In Korea, ginger tea is known as saenggangcha and features pine nuts as a garnish. In India, adrak chai is made with ginger, black tea leaves, and milk.

Benefits of Ginger Tea:-

Ginger has been used as a medicine for thousands of years in India, China, Greece, and the Middle East, especially to reduce nausea, heartburn, upset stomach, and morning sickness. It's also known for its anti-inflammatory and antioxidant properties. One of the benefits of ginger tea is that hot water can be soothing for sore throats, making fresh ginger tea prevalent during cold and flu season.

2. Turmeric:-

Curcumin which is the main ingredient of turmeric, has shown antiasthma activity against malaria-causing pathogens according to animal studies. Therefore, turmeric may help those suffering from malaria recover fast. There are many ways to use turmeric. You can put turmeric in a glass of warm milk to get the benefits. You can also put turmeric in your foods and dishes.

4. Tulsi :-

Tulsi is a famous herb used in the ayurvedic system of medicine. Tulsi is known to exert many health effects. The antiasthemic activity of tulsi is very well documented in many scientific studies. Tulsi may also boost the immune response against infective pathogens.

You can make tulsi tea by boiling fresh tulsi leaves in water. Strain this mixture in a cup and your tulsi tea is ready. You can add a drop of lemon juice or honey for additional taste.

Properties of Tulsi:-

- Tulsi is known to have many properties like:
- It might be an antipyretic (relieves fever) agent
- It might have anti-inflammatory activity
- It might be an antiemetic (prevents vomiting)
- It might help lower the blood sugar (antidiabetic)
- It might act as an hypotensive (lowers blood pressure)
- It might have hypolipidemic (lowers cholesterol) activity
- It might act as an analgesic (relieves pain)
- It might have anti-asthmatic activity
- It might be an hepatoprotective (liver-protective) agent
- It might help reduce stress (antistress)
- It might be a potent expectorant (expels mucous)
- It might have anticancer potential
- It might be a diaphoretic (induces sweating)

5) FRESH JUICE:-

Fresh fruits and vegetables work wonders for malaria patients. According to studies, vitamin A and vitamin C rich fruits and vegetables like beetroot, carrot, papaya, sweet lime, grapes, berries, lemon, orange help to detoxify and boost the immunity of the patient suffering from malaria.

CONCLUSION :-

Tips for Asthma Control

Individuals with asthma should identify their particular triggers, and reduce exposure or avoid them whenever possible.

It is important for those people with asthma, or their

caregivers, to try to maintain a triggerfree home.

Individuals with asthma should follow their physician's written asthma action plan, which allows them to take more control of their condition.

Asthma medication should be taken as prescribed by a physician.

People with asthma and their caregivers must understand the warning signs of an attack and always carry, or have quick access to, reliever medication.

Individuals with asthma and their caregivers should regularly discuss their symptoms with their doctor and health care providers, in addition to receiving proper asthma education in order to understand and better manage their condition.

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