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Medicinal plants used to treat the disease of gout –an overview

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ABSTRACT

Gout also called as hyper uricemia. Gout is characterized by sudden, severe attacks of pain, redness and tenderness in joints, often the joint at the base of big toe. Gout is a condition that develops when Uric acid is not properly excreted from the blood through urine .Excess uric acid builds up in the body and when not removed by the kidneys, it deposits in the form of crystals in the joints, primarily in hands and feet and especially in the joint of big toe. The risk of developing gout increases as the Serum uric acid level rises [>7 mg/dl]. In our focus medicinal plants used to treat the gout for the reason in the allopathic system of medicine is not cure the disease of gout, its only controlled. So few medicinal plants we reviewed this paper.

Keywords: Gout, uricemia, pain, serum, medicinal plants

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Introduction

Gout disease ,first identified by Egyptians in 2640 BC , PODAGRA [Acute gout occurring in the first Metatarsophalangeal joint] was later recognized by Hippocrates in 15th century BC who reffered to it as the Un walkable disease throughout history, Gout has been associated with Rich foods and excessive alcohol consumption. There is evidence that Colchicine, an alkaloid derived from the Autumn crocus [Colchicum autumnale] was used as powerful purgative in ancient Greece, its first use as a selective and specific treatment for Gout. Uricosuric agents were first used at the end of 19 centuries. In the modern era Non steroidal anti-inflammatory drugs are usually the drugs of choice for treating acute gout.Xanthine oxidase inhibitors, which are effective in reducing plasma and urinary urate levels.

Definition:

Gout also called as hyper uricemia. Gout is characterized by sudden, severe attacks of pain, redness and tenderness in joints, often the joint at the base of big toe .Gout a complex form of Arthritis Gout can affect any one, Men are more likely to be affected than Women. become increasingly succeptible to get gout after “Menopause.

Fig: showing the inflammation in joints due to uric acid accumulation

An attack of gout can occur suddenly ,often waking you up in the middle of night with the sensation that big toe is on fire .The affected joint is hot, swollen and so tender that even the weight of the sheet on it may be intolerable .

Gout is a condition that develops when Uric acid is not properly excreted from the blood through urine .Excess uric acid builds up in the body and when not removed by the kidneys, it deposits in the form of crystals in the joints, primarily in hands and feet and especially in the joint of big toe Gout a very painful form of Arthritis, seen mostly in men over 50 years of age. Now-a- days it is seen in the wider range of populations, as well as in women and children and is thought to be the result of eating habits where people consume excess of fats which contribute heavily to the formation of purine break down and uric acid. Uric acid is deposited in the form of “Monosodium urate crystals” in the various tissues .[For eg…Joints, Connective tissue, Kidney]

PRIMARY HYPERURICEMIA: Is called when Uric acid crystals saturation arises without coexisting diseases or drugs that alter uric acid production and secretion. In SECONDARY HYPER URICEMIA there is an excessive uric acid production or diminished renal clearance that occurs as a result of disease drug dietary or toxin.

SIGNS & SYMPTOMS:

The signs and symptoms of gout almost always occur suddenly often at night and without warning. They include: Intense joint pain, Lingering discomfort, [after most severe pain subsides , some joint discomfort may last from few days to few weeks]. Inflammation and redness limited range of motion. Acute and chronic inflammation associated with changes in Articular and periarticular structures .The risk of developing gout increases as the Serum uric acid level rises [>7 mg/dl]

FACTORS THAT INCREASING THE URIC ACID IN THE BODY INCLUDE:

DIET: Eating a diet that’s high in meat and seafood and high in beverages sweetened with fruit sugar [fructose] promotes higher uric acid levels, which increases risk of Gout .Alcohol consumption, especially of beer, also increases the risk of Gout.

OBESITY: If overweight, body produces more Uric acid and kidneys have more difficult in eliminating uric acid which greatly increases the risk of Gout.

MEDICAL CONDITIONS:

Certain diseases and conditions also develop Gout. These conditions include: untreated high blood pressure and chronic conditions like Diabetes, Meabolic syndrome ,Heart and Kidney diseases. Hematological causes of hyperuricemia and gout associated with increased nucleic acid turnover and break down to uric acid. Lymphoproliferative disorders, myeloproliferative disorders, certain hemolytic anemias and hemoglobinopathies. In chronic renal failure condition reduced clearance of uric acid can lead to Hyperuricemia.

CERTAIN MEDICATIONS:

The use of THIAZIDE DIURETICS [commonly used to treat hypertension] and low dose of ASPIRIN also can increase uric acid levels . CYTOTOXIC DRUGS increase uric acid concentrations by enhancing nucleic acid turnover and excretion. ETHAMBUTANOL and NICOTINIC ACID increase the uric acid concentrations by competing with urate for tubular secretion sites, there by decreasing uric acid excretion . CYCLOSPORINE decreases renal urate clearance as Pyrazinamide and Levodopa

Miscellaneous disorders like Keto acidosis, Psoriasis, Chronic lead poisoning are examples of conditions that may cause Hyperuricemia.

FAMILY HISTORY OF GOUT: If other members of family have had Gout, then the persons of that family are more likely to develop the gout disease.

RECENT SURGERY OR **TRAUMA**: Experiencing recent surgery or trauma has been associated with increased risk of developing Gout. **AGE** & **SEX**: Gout occurs more often in men, primarily because , women tend to have lower uric acid levels . After “menopause “, women’s uric acid levels approach those of men. Men are more likely to develop gout earlier usually between 30 and 50 years of age ,where as Women generally develops signs and symptoms after menopause

MECHANISM OF GOUT DISEASE

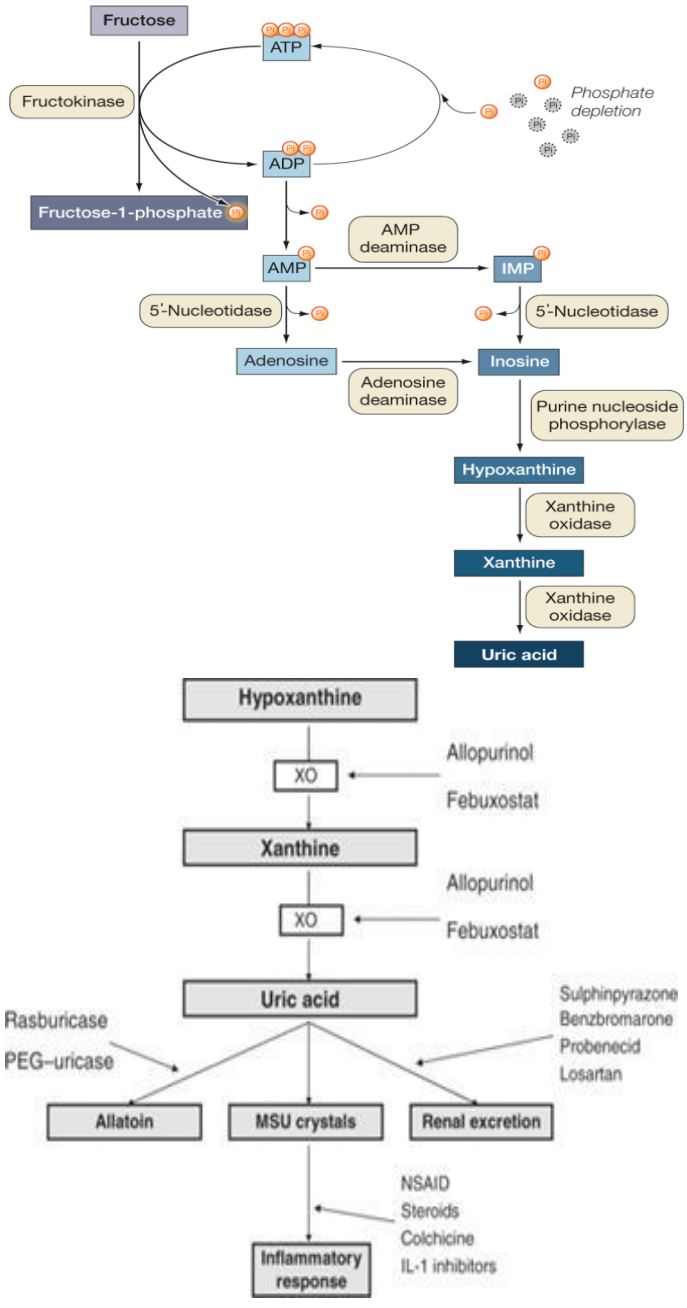
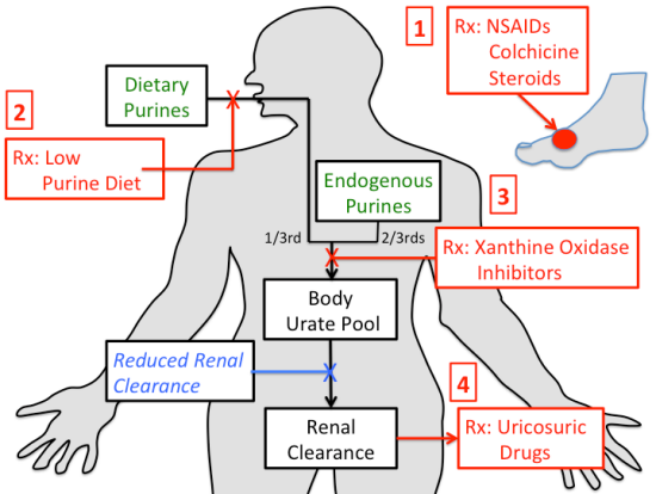


Fig: formation of inflammation due to accumulation of uric acid

ALLOPATHIC MEDICINE TO TREAT GOUT:



Anti inflammatory drug therapy should begin immediately for maximal therapeutic effectiveness . **Urate lowering drugs** should not be given until the acute attack is controlled. As these drugs may prolong the attack by causing a change in Uric acid equilibrium. Urate lowering agents can begin within 1 to 2 weeks after resolution of the attack .Specific drugs given in Gout are: **NSAIDS [Non steroidal anti inflammatory drugs]:**These drugs preffered when treatment is delayed significantly after symptoms onset or when the patient cannot tolerate the adverse GI affects of Colchicine .

Indomethacin [Indocin] : Usually given in dose of 50 mg three times daily initially then the dose is tapered **NAPROXEN [Naprosyn] : 750 mg** followed by 250 mg every 8 hours until the attack subsides . **SULINDAC [Clinoril]:** 200mg twice day to short reduce the dose with satisfactory response. Some times Cyclo oxygenase 2 [COX-2] inhibitors also may be used for these attacks.

CORTICOSTEROIDS:

Corticosteroid Intra articular injections are effective in patients with acute single joint gout . Specific doses of corticosteroids are related to joint size. An intra articular dose of T**riamcinolone** -8mg in smaller joints [10 mg in the knee] , **Methyprednisolone acetate** -5 to 25 mg per joints , **Betamethasone –** 3 to 6 mg can be used .

Systemic Corticosteroid Therapy: It is especially used when either NSAIDS or Colchicine cannot be given or have not been effective. Oral Prednisone – 20 to 60 mg /day initially with the dose tapered during a period of 5 to 7 days. It can be useful for gout patients without producing the rebound effect. **IM Betamethasone** -7mg or **IV Methyl prednisolone –** 125 mg are examples of other potential agents .**IM ACTH [Adrenocorticotropin hormone]** – 40 to 80 units helps in reducing inflammation by stimulating corticosteroid production by the patients Adrenal gland plus it activates Melanocortin type 3 receptors . These agents cannot be preffered because of short duration of action.

COLCHICINE:

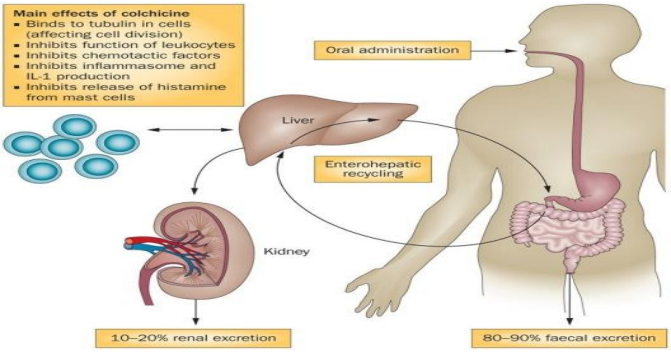


Fig : Showing the effects of Colchicine in various body parts

It is an Antimitotic drug , highly effective at relieving acute attacks of Gout but has the lowest benefit or toxicity. A typical oral dose is 0.5 to 0.6 mg every 1 to 2 hours until the pain is abated .Maximum dose – 6 to 8 mg has been administered .

ALLOPURINOL: Dose – 100 to 300 mg per day orally . Currently it is most commonly used agents for long term control of Chronic Gout . It is the drug of **Xanthine oxidase** enzyme that catalyses the conversion of Xanthine to uric acid and Hypoxanthine to Xanthine .Major active metabolite in it is Oxypurinol also a Xanthine oxidase inhibitor .

URICOSURIC AGENTS: It is generally recommended for younger patients with normal

renal function who are under excretors of uric acid . Both Probenecid and Sulfinpyrazone are competitively inhibit the active reabsorption of uric acid at PCT . It helps in decrease the serum urate concentrations .In **presence** of **renal dysfunction [creatinine clearance <50 ml/min] uricosurics are not effective and are contraindicated .**

HERBAL MEDICINE FOR TREATMENT OF GOUT:

Healthy food choices that can help in regulating uric acid in the body.

GREEN TEA:

Fig: Green tea

Scientific name: Camellia sinensis
Biological source **:** Camellia sinensis is a species evergreen shrub or small tree whose leaves and leaf buds are used to produce Tea

Family: Theaceae

Active constituents : Catechins, Caffeine, and and Theanine (amino acid) Uses
: Antioxidant, Antibacterial Green tea is rich with high Catechin content which is a potent antioxidant. Catechin helps in slow down the production of particular type of enzymes in the body that is related to uric acid formation.Thus it extremely helps in reducing the uric acid levels.

FIBRE: Fibre rich diet can be helpful in reduces the uric acid level in the body.

Examples….. Oats, whole grains

OATS

Fig: Oats

Scientific name : Avena sativa

Family: Poaceae

Active constituents: Avenanthramides, Flavavanoligans , Beta glucan ,Terpenoid
Uses:Reduce the uric acid level in the body

Vegetables like Broccoli, Pumpkin, Celery also helps in reducing the uric acid level, these type of foods filled with dietary fibres that are extremely beneficial in absorption of uric acid and eliminating it from the body.

BROCCOLI

Fig: Broccoli

Scientific name : Brassica oleracea
Biological source: species of Brassica oleracea
Family: cruciferae
Active constituents: Provitamin A, Vitamin C ,Vitamin K, Isothiocyanates
Uses : Reduces the uric acid levels in the body

PUMPKIN

Fig: cucurbits

Scientific name:Cucurbita maxima
Family : Cucurbitaceae
Biological source: It is cultivated in the form of Cucurbita maxima , C. moschata, C.argyrosperma
Active constituents:Phytosterols , (eg… Betasitosterol)

CELERY

Scientific name: Apium graveolens
Family : Apiaceae /Umbelliferae
Biological source : Long fibrous stalk tapering into leaves of Celery Active constituents :

Hydroxyphenyl ethanol, Dimethoxy psoralen ,Isofraxidin ,Eugenic acid

Uses: Spice ,and its extracts have been used as Herbal medicine

VITAMIN C ENRICHED FRUITS:

These reduce the uric acid level in short period .The required amount of vitamin c every day is 500 mg

Examples: Orange, Sweet lemon

ORANGE:

Fig: Orange

Scientific name: Citrus sinensis

Family: Rutaceae

Active constituents: Hesperidin, Limonene, Naringin, Tangaretin, Synephrine alkaloids

SWEET LEMON:

Fig: Sweet lemon

Scientific name: Citrus limetta

Family: Rutaceae

Biological source: The fruits of Citrus limonum species

Active constituents: Vitamin C, Dietary fibre, Carbohydrates

CHERRIES

Fig: Cherries

Scientific name: Prunus avium (sweet cherry) ,Prunus cerasus (Sourcherry)

Family: Rosaceae

Active constituents: Anthocyanins, Hydroxycinnamic acids, Hydroxy benzoic acid

Uses:It helps in people who suffering with high levels of uric acid in their body

BERRIES: All types of berries like Straw berry, Blue berry, Rasp berry has anti inflammatory properties and also contain high in fibre content help in promoting reduction of Uric acid in their blood .

BLUE BERRY:

Fig: Blue berry

Scientific name :Cyanococcus

Family :Ericaceae

Active constituents :Pterostilbene, Natural antioxidants

Uses:Antioxidants protect us from disease and age related health risks .

RASP BERRY:

Fig: Rasp berry

Scientific name :Rubusidaeus

Family : Rosaceae

Active constituents : Anticholine esterase

Use:Act as smooth muscle stimulant

STRAW BERRY

Fig : Strawberry

Scientific name: Fragaria ,

Family:Rosaceae

Active constituents : Butanoic acid , Methyl ester , Hexanoic acid ethyl ester

Berries have anti inflammatory properties made out of substance called Anthocyanins .This particular substance helpful in reducing high uric acid levels .It also prevents the uric acid from crystallizing and getting deposited in the joints that may later lead to joint pains.

FRUITS & TOMATOES

Fig: Solanum lycopersicum (Tomato)

Fruits, just like vegetables extremely helpful in providing relief from increasing levels of Uric acid. Tomatoes which are also counted as a fruit rather than vegetables and are good for body and their high vitamin -c content can help in reducing the uric acid levels.

Scientific name: Solanum lycopersicum
Family: Solanaceae
Active constituents: Steroids, Proteins, amino acids, Minerals, lipids

WATER (OR) FLUIDS

Water is one natural cleanser and fluid that flushes out toxins from the body. So definitely drink at least 10 to 12 glasses of water daily .Fluids are beneficial in helping removal of Uric acid from the body through excretion . Drinking more fluids and water help in reducing the uric acid levels.**But remember to choose the right type of juices and fluids.**

Conclusion:

Gout a very painful form of Arthritis, seen mostly in men over 50 years of age. Now-a-days it is seen in the wider range of populations, as well as in women and children and is thought to be the result of eating habits where people consume excess of fats which contribute heavily to the formation of purine break down and uric acid. India is a developing country, here poor people is more affected this type of the diseases. Without side effect the disease of gout cure for medicinal herbs. In the above mentioning the medicinal herbs once total work of research over it will be help for our society.

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