

Unani Dieto-Therapy Approach with Special Reference of Lifestyle Modifications to Manage Nigras (Gout): An Old Metabolic Disorder

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DOI: <https://doi.org/10.52403/ijhsr.20230325>

ABSTRACT

Nigras (gout) is one of the oldest known diseases and the most common form of inflammatory arthritis, resulting from the deposition of monosodium urate crystals in the joints and various other tissues, causing pain and swelling in the affected areas. The main causes of primary gout appear to be dietary and it's thought to occur when the human body makes too much uric acid and doesn't excrete enough of it. Since the immemorial, gout has been associated with overeating, drinking, and wealthy men who overdo it with food and drink.

Overeating (ghaleez ghiza e.g. red meat, seafood), obesity, alcohol consumption, excessive coitus especially when stomach is full, indigestion were recognized as contributing factors even in ancient times. Consumption of sugar sweetened soft drinks sweet, and fructose, which had not been previously recognized, was described as a new risk factor for gout. Finally, protective factors such as skim products, high dose vitamin C and caffeinated coffee have also been described. About 70% of uric acid is produced by human body, with the remaining 30% coming from foods and beverages that contain purines. Gout is treated with medications, but a healthier diet can play an important role in treating hyperuricemia various associated diseases. A low-purine diet used to be recommended to manage gout and maintaining a healthy weight and eating a healthier diet are the best ways to treat gout. The goal of this article was to provide diet and lifestyle recommendations for gout and hyperuricemia that were developed by a group of rheumatologists; based on a review of the most recent literature.

Key words: Ghaleez ghiza, Hyperuricemia, Nigras,

INTRODUCTION

Nigras (Gout) is one of the most prevalent metabolic conditions that frequently impact middle-aged elderly men and postmenopausal women. According to *Buqrat*, (460-377 B.C) commonly known as Hippocrates in modern world, gout was referred to as the "disease of king" because

it was linked to a diet rich in calories and protein, and affluent men who indulged excessively in food and alcoholic beverages. The association with the affluent class and a luxurious lifestyle was a hallmark of this condition^{1,2,3,4,5,6}. *Nigras* has played a great role in history and known four thousand years ago. Today, it is still the fastest

growing disease in the United States and one of the most painful forms of inflammatory arthritis⁷. It is preceded by excess uric acid in the blood and is associated with an increased risk of cardiovascular disease, both of which are related to an unhealthy diet⁸.

Hyperuricemia, which leads to deposition of monosodium urate crystals in the joints and other tissues, is essential for the development of niqras (gout). The development of gout depends on the degree of persistent hyperuricemia, which is defined by a plasma urate concentration (SUA) above > 7 mg/dL. Hyperuricemia usually results from increased purine intake, turnover, production or impaired renal excretion of urate, or the combination of processes. There is a close relationship between serum urate levels and the risk of developing gout. Uric acid is normally formed as an end product of the breakdown of purine compounds. Decreased excretion by kidneys results in excess serum uric acid (SUA), or hyperuricemia, which occurs in 5 to 25 percent of the population. About ten percent of people with hyperuricemia develop gout and sixty to eighty percent of people with gout are hyperuricemic. Persistent hyperuricemia predisposes some individuals to develop clinical manifestations such as gouty arthritis, urolithiasis and renal dysfunction. Individuals with high blood uric acid levels have thirty time higher risk of developing gout than those with normal levels^{1,3,8,9,10,11,12,13,14,15,16}.

Risk factors for the development of hyperuricemia and gout include both non-modifiable risk factors (Table- 1) and modifiable risk factors (Table- 2)^{8,17}.

Table-1: non-modifiable risk factors:

Age
Sex
Race
Genetics

Table-2: Modifiable risk factors:

Obesity
Low purine diet
Alcohol cessation
Avoiding diuretic therapy
Local ice therapy

Cohort studies have shown that a typical Western diet; based on high consumption of processed and red meats, sweetened meals, and refined grains is associated with a forty-two percent higher risk of developing gout than a Mediterranean diet⁸.

DIETARY FACTORS INFLUENCING GOUT:

Research has confirmed that certain dietary habits influence the risk of developing gout; therefore, there has been recent interest in gout and the influence of diet on the clinical picture of gout. A prospective four-years study by Choi et al^{18,19} showed that excessive consumption of seafood and red meat was associated with a higher risk of gout. Consumption of oatmeal and purine rich vegetables such as peas, beans, spinach, lentils, cauliflower and mushrooms did not increase gout susceptibility. Thus dietary purine restriction may apply only to purine of animal origin. The risk was also low for low-fat dairy products. It was also found that even moderate, regular beer consumption was associated with a higher risk of gout, since beer is the only alcoholic beverage known to have high purine content.

Another study showed that two servings of Bing cherries lower serum uric acid levels by increasing urate excretion by the kidney²⁰. Vitamin- C at a dose of 8 g per day for three to seven days induced uricosuria and lowered uric acid levels by up to 3.1 mg/dL²¹. In contrast, studies have shown that fructose increases serum urate levels in patients with hyperuricemia. Intravenous fructose has been shown to increase uric acid production by increasing the rate of purine nucleotide degradation.

Dietary modification may benefit some patients in whom the metabolic syndrome is often associated with insulin resistance. Dessein and colleagues²² reported that a low carbohydrate diet of about 1600 calories per and an adequate amount of protein, unsaturated fats, and plenty of fibers was able to reduce plasma uric acid levels by 18 percent over 16 weeks in such patients. All

these patients had obesity, hypertension, heart disease, hypercholesterolemia, diabetes and gout.

Alcohol consumption can increase urate levels, and excessive alcohol consumption has been associated with an increased risk of first-onset gout^{23,24,25,26,27,28}. According to studies, beer; causes a greater increase in serum urate levels than wine due to its higher purine content based in part on epidemiological studies²⁹. Despite the low purine content of alcoholic beverages, several mechanisms have been implicated in the pathogenesis of ethanol-induced hyperuricemia. The mechanisms include the following.^{30, 31, 32, 33, 34}

- Excessive alcohol consumption causes transient lactic acidemia and decreases renal urate excretion, exacerbating hyperuricemia.
- Sustained alcohol consumption stimulates purine production by accelerating the breakdown of adenosine triphosphate to adenosine monophosphate via the conversion of acetyl to acetyl Co-A during ethanol metabolism
- The purine content of beer has a greater effect on uric acid production.

Experimental evidence shows that dietary factors can reduce the inflammatory response to urate crystals and influence serum urate levels. Oils rich in gamma linoleic acid and fish oil, which are converted to less inflammatory prostaglandins, reduce inflammation

triggered by urate crystals. The two servings of Bing cherries also showed a trend toward decreased production of nitric oxide³⁵. Research has also confirmed that some foods and beverages may have protective effect against gout³⁶.

The American Dietetic Association Nutrition Care Manual recommends the following³⁷.

DURING AN ACUTE GOUTY ATTACK

- ✓ Consume eight to sixteen cups of fluid per day, at least half in the form of water.
- ✓ Withhold from alcohol
- ✓ Exclude animal foods.
- ✓ Limit organ meat, fish and poultry to four to six oz per day.
- ✓ Consume a moderate quantity of protein (recommended sources includes- low fat or non fat dairy, tofu, eggs, butter and nut.

DURING REMISSION

- ✓ Drink eight to sixteen cups of fluid per day, at least half in the form of water.
- ✓ Withhold from alcohol.
- ✓ Follow a very well balanced eating plan. As tolerated, eat animal foods and continue to eat a moderate amount of protein.
- ✓ Maintain a desirable body weight. Avoid fasting or high protein diets for weight reduction.

PURINE CONTENT OF FOODS:

Group 1: 0- 50 mg purine/ 100gm

1	Fruits	
2	Vegetables	All except those in group 2
3	Cereals	All except those in group 2 (most bread, cakes, most breakfast cereals, biscuits, rice, barely and pasta are permitted in moderation)
4	Dairy products	Milk, cream, yoghurt, ice-cream, cheese, eggs
5	fats	Within reasonable calorie limits (butter, cooking oils, mayonnaise)
6	Nuts	But not peanuts, cashew nuts and salted nuts
7	Preserves	Jam, chutney, sweets, pickles
8	Beverages	Tea, coffee, soft drinks

Group 2: 50- 150 mg purine/ 100gm

1	Poultry	Chicken, duck, turkey, goose
2	Red meat	Beef, lamb, pork, bacon
3	Fish	Except those in group 3 Oyster, prawn, shrimps, shellfish
4	Cereals	Whole grain cereals (oatmeal, brown rice), whole grain bread and pasta, lentils, soybeans, soya flour, tofu

Group 2 To Be Continued...		
5	Vegetables	Spinach, cauliflower, broccoli, Brussels sprouts, asparagus, mushrooms, beans, peas
6	Nuts	Peanuts, ground nuts, cashew nuts
7	Fish	Tofu

Group 3: 150- 1000 mg purine/ 100gm		
1	Organ meat	Kidney, heart, liver,
2	Extracts of meat and yeast	
3	Fish	Roe (cod roe, cavicar), cyayfish, lobster, small fish or processed (anchovies, sardines, sprats, Thai fish sauce, whitebait)

MANAGEMENT

Guidelines for the management of gout, issued by the European League Against Rheumatism (EULAR) and the British Society of Rheumatology, emphasize the need for better patient education, control of comorbidities, and appropriate use of hypouricemic agents and lifestyle advice for all gout patients^{38,39}.

Dietary advice includes abstaining from alcohol consumption, heavy meals, sweetened drinks, excessive consumption of meat and seafood. This type of diet seems to be an obvious option for the treatment of hyperuricemia and gout, since urates are formed when purines are broken down. Excessive intake of purine-rich foods such as meat and seafood is definitely associated with higher serum urate levels in the blood. The same is true to a lesser extent for legumes, which are also rich in purines but rich in dietary fiber; which can be bound to uric acid in the intestine before being excreted from the body^{8,38,39}. Genetic gout cannot be cured, but its phenotypic expression can usually be modified and the progression of clinical complications controlled or reversed⁴⁰.

The goal of gout therapy is to stop the acute attack in the following weeks; this is achieved by lifestyle changes and discontinuation of medications such as diuretics. These measures may help alleviate some of the symptoms and signs of gout when used in conjunction with pharmacotherapy^{41,42}.

PREVENTIVE MEASURES

Excessive coitus, alcohol, baths, exercise, anger are the things to be avoided in gout⁴³. Overeating (*ghaleez ghiza* e.g. meat),

drinking alcohol, lack of exercise, passing a high profile-life, aaraz-e-nafsani (anxiety, tension), low physical activity, indigestion, sleeping on an empty stomach, excessive sexual intercourse especially on a full stomach, excessive sugar intake associated with an increased risk of developing gout. All these things should be avoided in gout^{44,45,46}. A change in diet in terms of quality and quantity and moderate exercise delay the development of gout⁴⁶.

According to *Nooh bin Mansoor Qamri* "Gout patients avoid eating spicy foods, meat, alcohol in excess and increase water intake and the use of diuretics.

According to *Ibn Sina*, gout patients should strictly avoid eating meat. *Rhaze* also suggests; "Avoid the intake of alcohol, sweetened foods, and meat in excess and the continuous intake of diuretics to prevent the development of gout".

Rhaze stated, "Gout patients should avoid camels meat, beef, namaksud (salted jerky meat), as well as dead game meat and all kind of jerky meat. For fish, it is advisable to avoid all types of salted fish; as well as stinky, unsalted fish with stiff flesh. Dairy products should be avoided altogether, except for small amounts of milk, boiled with rice and sprinkled with a pinch of tabar zad (solid white sugar). It is also advisable to refrain from increased consumption of certain types of dried fruits, namely walnuts, dried dates, unripe dates, honey natif, and all types of natif, pine seeds, Syrian carob beans, etc.⁴.

CONSERVATIVE TREATMENT

Although pharmacologic therapy is the cornerstone of treatment for gout but non-pharmacological treatments are also

indicated and useful in their own right, including

- Alcohol consumption, weight gain and diuretic use were found to be independent predictors of gout in a community-based epidemiologic study; therefore avoidance of alcohol consumption may lead to a decrease in gout²⁶.
- Dietary intervention with moderate calorie/ carbohydrate restriction reduced serum urate levels by 18% and the frequency of attacks by 67%²².
- For many years, cherries have been reported to help relieve gout attacks⁴⁷. This is thought to be due to the anthocyanins they contain, which have a COX-inhibitory effect²⁰.
- Low purine diets have been used in the past to try to lower serum urate levels, often with limited success.
- Local ice therapy during an acute attack in patients treated with prednisolone significantly reduced pain as compared with patients treated with prednisolone alone⁴⁸.

According to *Ali Ibn-e-Zain*, "Walking bare-footed during summer seasons is beneficial to the gout patients"⁴⁴.

According to *Buqrat*, "the application of cold water (Nutool) to the feet is beneficial for gout sufferers"⁴⁶.

Dioscorides said that "Nutool of Gandhak water is helpful in gout". Hammam-e-Yabis is very useful for gout patients⁴⁶.

Zakariya Rhazi stated that gout can be treated if the following 10 procedures are followed:

- i) Self-restraint through restricted diet.
- ii) Adherence to fluid and nutrition therapy with emphasis on specific foods and beverages.
- iii) Administration of laxatives (medication to promote bowel evacuation).
- iv) Stimulation of vomiting.
- v) Bloodletting (Hijama)
- vi) Application of water to the feet.
- vii) Treatment with ointments and poultices.
- viii) Steam baths.

ix) Taking preventive measures to avoid gouty flares.

x) Rapid treatment of incipient gout with counteracting drugs and analgesics^{4,49}.

Optimal treatment of gout requires both non-pharmacological and pharmacological measures and depends on:

- Specific risk factors (serum urate levels, previous attacks, radiological signs)
- The clinical phase (acute/recurrent gout, intercritical gout, and chronic tophic gout)
- General risk factors (age, gender, obesity, alcohol consumption, urate-increasing medications, drug interactions, and comorbid conditions such as obesity, hypertension, and renal complications).
- Complications of the disease resulting from deposition of uric acid crystals in the joints kidneys and other sites.

Relief of pain and inflammation is the primary or short-term goal of treatment for an acute attack of gout. For chronic gout, the goal is to lower serum urate levels to < 6 mg/dl to promote resolution of tophi and prevent further flare-ups.^{1,9,50}

PATIENT EDUCATION

The most important obstacle to optimal treatment of gout is lack of patient education. Education about the disease, precipitating factors, lifestyle changes, and reasons for using various medications can improve patient adherence and treatment outcomes. Recent studies have shown that many patients taking allopurinol are prescribed suboptimal doses¹. Patients are not adequately educated on how to take allopurinol e.g. allopurinol should not be taken in intervals. In up to 50% of patients, allopurinol is prescribed for asymptomatic hyperuricemia rather than for an approved indication such as frequent and debilitating gout attacks, tophi, chronic erosive arthritis, urate nephrolithiasis⁵¹. Education of physicians is also important¹.

LIFESTYLE MODIFICATIONS

In addition to the medical interventions needed for gout, patients are encouraged to make dietary and life-style changes to achieve better treatment results. The goal is to reduce obesity, decrease consumption of purine-rich foods and alcohol, increase the amount of fluids, vegetables and fruits in the diet, and increase physical activity^{2,52}. Gout has long been associated with excessive alcohol and food consumption, and obesity. Epidemiologic studies have recently supported the potential role of lifestyle modification in the management of gout patients. According to the Health Professionals Follow-up Study (HPFS), obesity, weight gain, hypertension, and diuretic use were associated with an increased risk of developing gout. Weight reduction was found to be protective in this and several other studies has found the same (Nurses' Health Study)¹. Therefore, it is recommended that patient maintain their weight at an ideal level through a balanced diet and physical activity, especially walking⁴.

Alcohol consumption should be completely avoided because it inhibits the excretion of urates⁹. Beer poses a greater risk than spirits, whereas moderate wine consumption does not increase the risk⁵⁰. Dietary and life-style modifications are an essential part of the treatment of gout. In addition, dietary and life-style modification has the dual benefit of improving not only gout symptoms; but also many of the diseases associated with gout, such as hypertension, hyperlipidemia and diabetes mellitus².

Roddy et al. pointed out that the prevalence and incidence of gout have increased in recent decades due to life-style and dietary factors⁴.

Before imposing dietary restriction, factors that inhibit the excretion of accumulated uric acid should be excluded, such as presence of alcohol, excess tannins, and fat. Increased amounts of fluids dilute the urine concentration and thus help to excrete the accumulated uric⁹. For this purpose, large

amounts of water and others fluids are recommended⁴.

A low fat and low purine diet is recommended to decrease elevated uric acid levels in the blood⁴. Foods high in Purine such as butter, red meat, liver, kidney, pancreas, testes, peas, pasta, sweets, potatoes, white bread, wine, beer, liquor, fish, poultry and sea food etc.; have been shown to increase the risk of gout, and acute attacks can be avoided by omitting these purine-rich foods. Moderate consumption of purine-rich vegetables (lentils, peas, beans, spinach, mushrooms, cauliflower, etc.) or protein is not associated with an increased risk of gout and generally does not trigger acute attacks^{50,53}. Higher consumption of low-fat dairy products is associated with a lower risk of gout (protective effect)⁵⁰. Therefore, inclusion of skim milk and/or low-fat yoghurt, soybeans, and vegetable protein sources in the diet should be encouraged¹. Those who consume milk once or several times a day have lower serum uric acid levels⁵⁰. The HPFS study also showed that consumption of fructose-containing sugar-sweetened soft drinks was strongly associated with increased risk gout, whereas coffee consumption was inversely associated with gout risk. Long-term coffee consumption leads to increased insulin sensitivity, which may result in lowered urate levels. Therefore, gout patients should be advised to avoid fructose containing soft drinks¹.

ENERGY

It should be set at 500 Kcal below normal requirements for obese/overweight patients. Fasting/low carbohydrates eating should be avoided as it triggers gout attacks due to ketosis⁹.

CARBOHYDRATES

A generous consumption of fruits and vegetables is recommended. The use of soluble fibre is helpful⁹.

FATS

A low fat diet reduces the weight & relieves symptoms of gout by increasing excretion of accumulated uric acid⁹.

PROTEIN

Organ meat & legumes are best avoided due to their high purine content⁹.

DIETARY RECOMMENDATIONS FOR GOUT SUFFERS

Several studies recommend the following dietary recommendations for gout:

Fresh cherries, strawberries, blueberries, and other red-blue berries, bananas, celery, tomatoes, vegetables, including cabbage, parsley, green-leafy vegetables, foods high in bromelain (pineapple), foods rich in vitamin C, fruit juices, and purified water, low fat dairy products, coffee, tea, carbonated beverages, and essential fatty acids (salmon, flaxseeds, nuts, and seeds)^{54,55}.

Rhazi stated, "Cereals are generally not recommended; however, beans and chickpeas are the least harmful for gout patients with bilious blood, and rice and chickpeas for patients with phlegmatic blood. In addition, eggs are allowed only if they are soft-boiled and eating in gulps. Among dried fruits, almonds are the most recommended. Gout patients are allowed to fresh fruits of moderate sweetness, such as fully ripe grapes, figs, apples, pomegranates, quinces and pears. Vegetables are completely taboo with the exception of lettuce, endive, jello and celery⁴.

THE PURINE CONTENT OF FOODS HIGH-PURINE FOODS

Meat, Seafood, Meat extracts gravies, vegetables such as peas, beans, and lentils, yeast and yeast extract, oatmeal, spinach, asparagus, cauliflower, mushroom, purine-rich alcoholic beverages such as beer¹⁷.

CONCLUSION

Gout is the most common form of inflammatory arthritis in men caused by needle-shaped uric acid crystals in the joints and other tissues of the body, resulting in severe inflammation and pain. Lifestyle measures, such as modifiable risk factors; e.g., weight control, regular exercise,

smoking cessation, reduced consumption of red meat, alcoholic beverages (especially beer), seafood, certain medications, avoidance of foods and beverages high in fructose, corn syrup, and limiting consumption of natural sweet fruit juices may help in treating chronic gout. These non-pharmacological lifestyle modifications delay the gout flares and progression of gout in gout patients by lowering urate levels. To reduce the risk of developing gout, increase consumption of fresh fruits, vegetables, and whole grains, (which provide complex carbohydrates); coffee, low fat milk, and milk products and consume protein especially from low fat dairy products as these may have a protective effect against gout; and stay well hydrated by drinking eight to sixteen cups of fluid per day, at least half of which should be in the form of water. Individuals with recurrent gout should always follow a balanced diet plan. Consume animal foods according to tolerance, eat a moderate quantity of protein, and maintain an appropriate body weight.

Declaration by Authors

Ethical Approval: Not Applicable

Acknowledgement: The authors would like to thank the Professor Misbahuddin Siddiqi Department of Moalijat, and Asstt. Prof. M. Saad Ahmad Khan Department of Ilaj-Bit-Tadbeer, Faculty of Unani Medicine, Aligarh Muslim University, Aligarh-202002 for their kind support, constant inspiration, providing valuable suggestions and correction to make it praiseworthy.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Hilal Akhtar, Malik Itrat, Md. Wasi Akhtar et.al. Unani Dieto-therapy approach with special reference of lifestyle modifications to manage niqras (gout): an old metabolic disorder. *Int J Health Sci Res.* 2023; 13(3):234-242.
DOI: <https://doi.org/10.52403/ijhsr.20230325>
