

# Dietary Management in Hyperuricaemia

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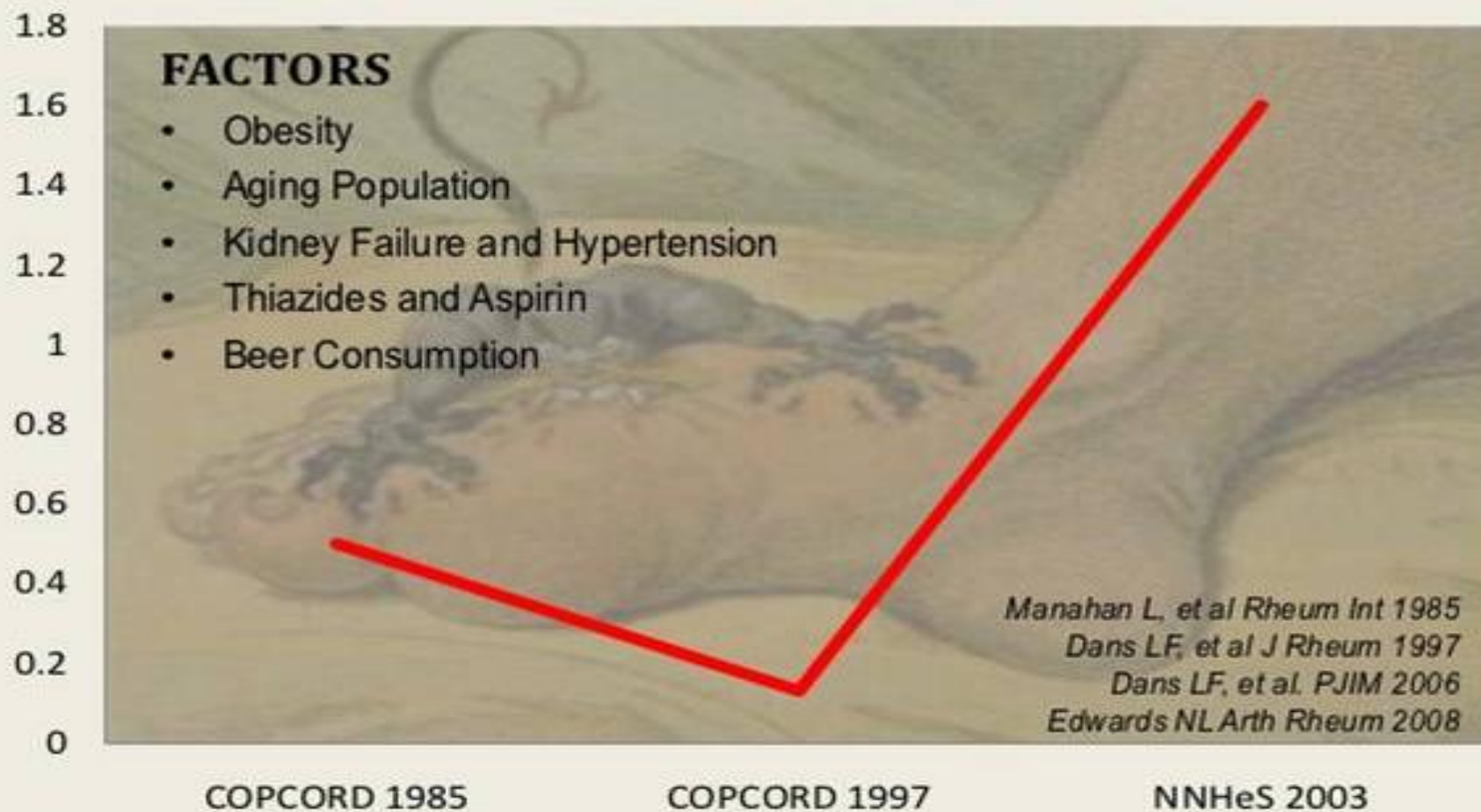
# Introduction

- Hyperuricaemia is an elevated uric acid level in blood.
- SUA level normally
  - 2.0-7.0 mg/dL for male &
  - 2.0-6.0mg/dL for female
- Usually higher SUA level present in male sex, increased age, obesity and in some ethnic groups (maoris & pacific islanders).

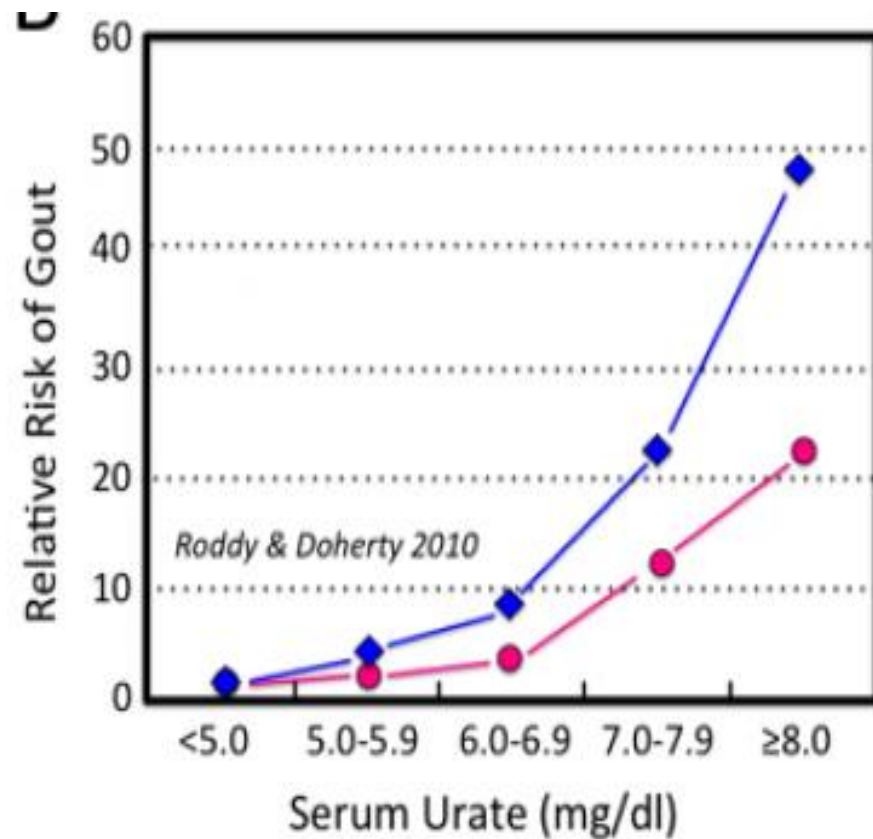
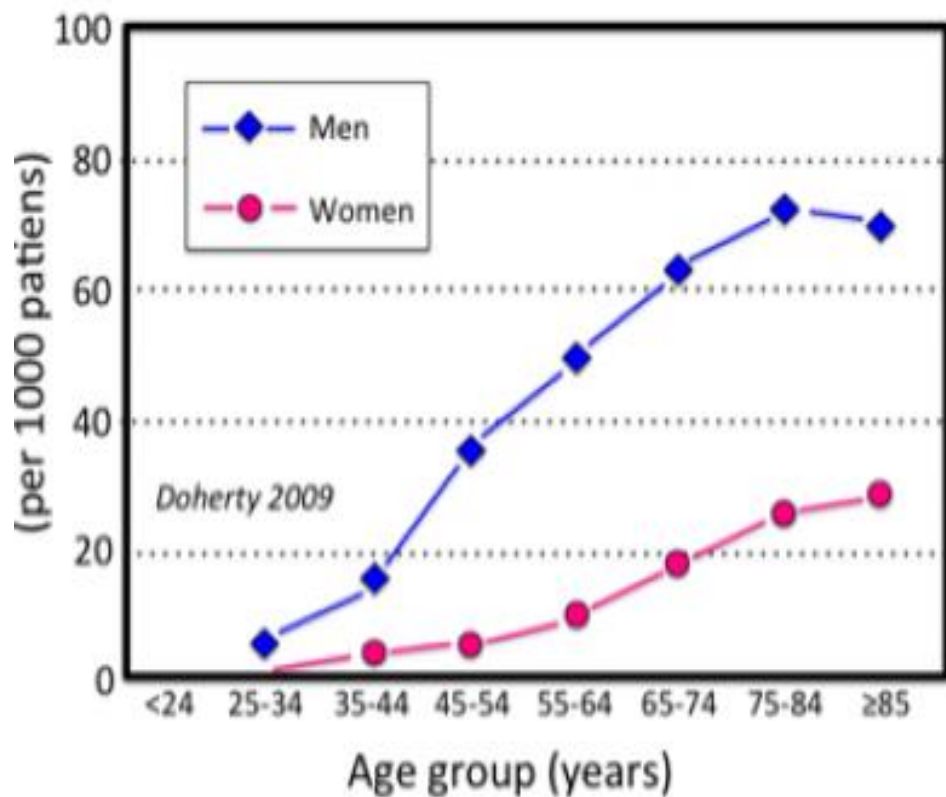
# Prevalence of hyperuricaemia

- Increase SUA concentration or hyperuricaemia become more common in recent years due to
  - Change in dietary habit
  - Increase life expectancy
  - Higher prevalence of metabolic syndrome
  - Drugs – Thiazide, low dose aspirin
  - Increased CKD
  - Alcohol and beer consumption.
  - Lead exposure

# Contd...

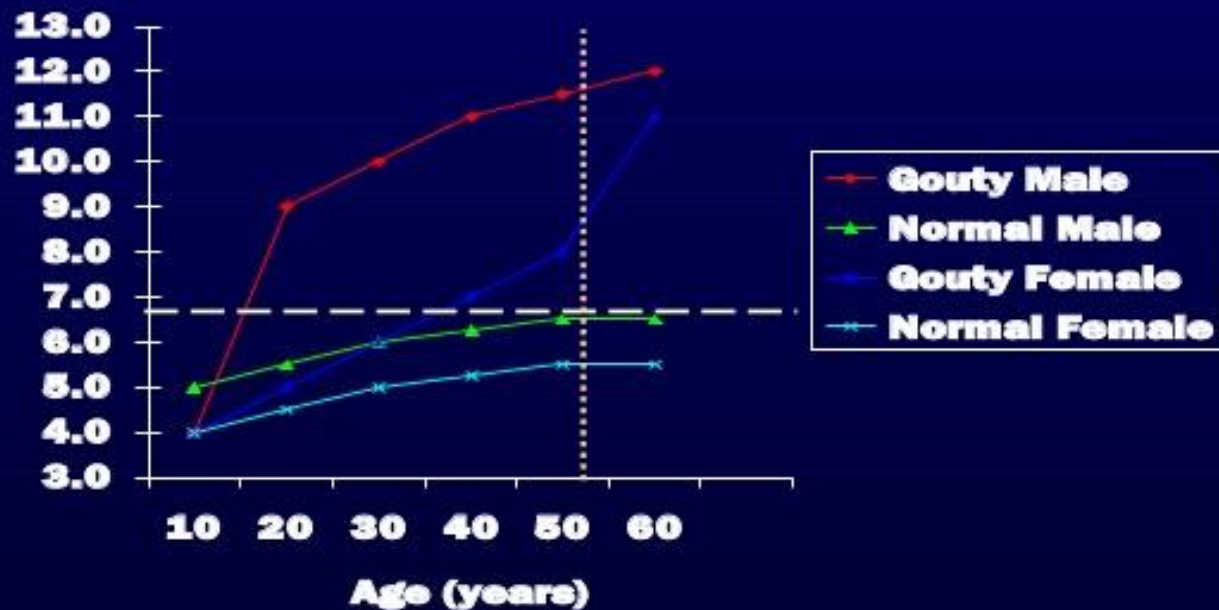


# Contd...



Contd...

## Serum uric acid levels & age

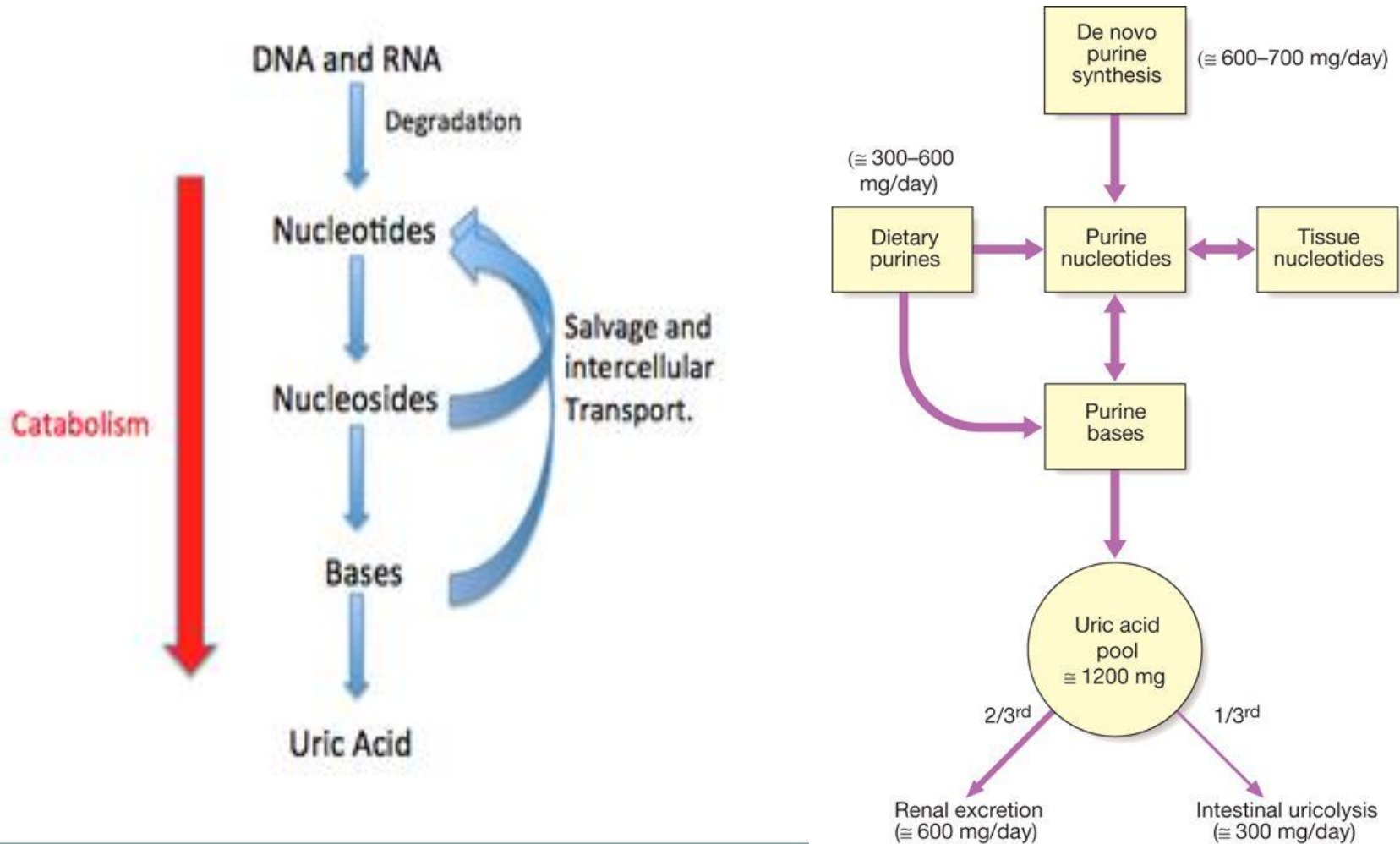


# Uric acid synthesis & UA pool

- Uric acid is an end product of purine metabolism
- One-third of total uric acid is derived from dietary source and two-third from endogenous purine metabolism.
- The concentration of uric acid in body depends on the balance between
- Endogenous synthesis &
- Elimination by Kidneys (2/3) and gut (1/3)



# Contd...



# Contd...

## Causes of Hyperuricaemia

- Diminished renal excretion
  - Increase reabsorption
  - Renal failure
  - Alcohol
  - Lead toxicity
  - Lactic acidosis
  - Drugs
- Increase intake
  - Red meat, offal, seafood
- Over-production
  - Myelo & lymphoproliferative disease
  - Psoriasis
  - High fructose intake
  - Glycogen storage disease

# Contd...

- Usually Hyperuricemia arise from either overproduction or underexcretion or a combination of both.
- On regular diet, renal excretion of  $>800$  mg of uric acid per 24 hour suggest over production.

# Antioxidant and pro-oxidant paradox

- Uric acid is a diprotic acid.
- It is capable of donating two protons in two sequential steps during dissociation.
- It can act as either antioxidant or Pro-oxidant.
- Anti-oxidant or Pro-oxidant properties depend on milieu interior.
- Antioxidant in plasma and pro-oxidant in the cell.

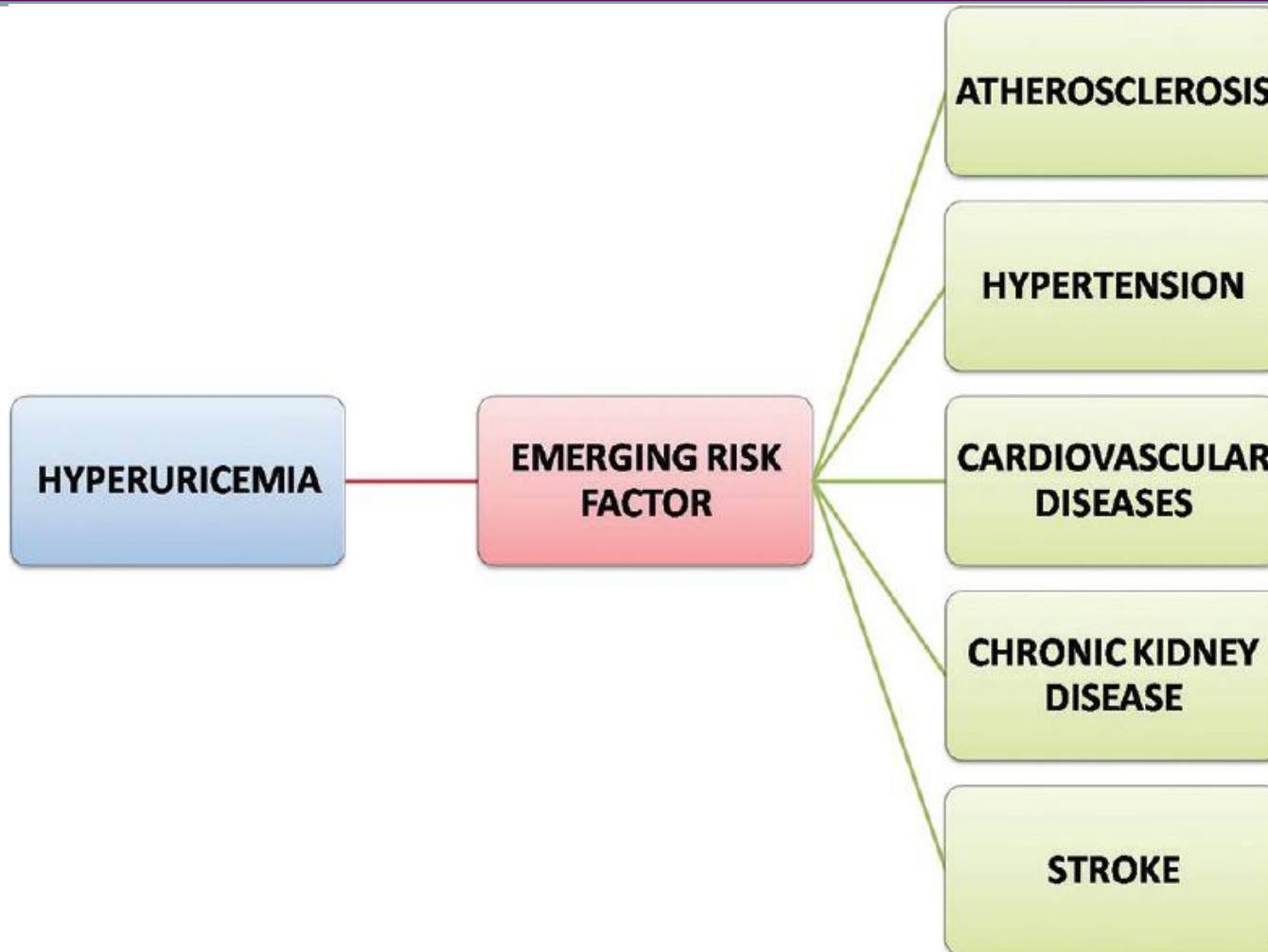
# Cont..

- Acute elevation in uric acid provide some anti-oxidant protection in nervous system, particularly in condition such as multiple sclerosis, Parkinson's disease and acute stroke.

# Hyperuricemia - an emerging risk factors

- Despite the proposed beneficial role of uric acid, hyperuricemic patients have a higher rate of cardiovascular and all-cause mortality in comparison to subjects with normal uric acid.

# Contd...



# Hyperuricemia management debate

New ACP guideline leads to debate -

- Specific threshold targets for lowering uric acid level have not been tested RCT.
- It has not been show that lowering acid actually leads to clinically important endpoints for patients.



## Contd...



Based on our understanding of biology, we know that –

- Every one want to get uric acid level below the saturation point which is 6.8mg/dL
- Most Rheumatology Association recommend lowering uric acid to at least below 6.
- Some authority recommend lowering it less than 5, in patients having large urate burden.

# Dietary management

- The prevalence of gout in the general population is about 4%
- While it is upwards of 20% for Hyperuricemia  
**‘That's a lot of people’**
- Fortunately 95% of hyperuricaemic subjects remain asymptomatic

## Contd...

- When asymptomatic, a significant percentage of hyperuricaemic patients have urate crystals on their cartilage and joints.
- Asymptomatic hyperuricemia have impact on the vasculature and that may contribute to cardiovascular disease.

## Contd...



- From ancient times, hyperuricemia is considered a problem of excessive eating and drinking.
- Obesity, excessive red meat and alcohol were recognized as causal factors.
- New risk factors are fructose and sweetened beverages.
- Protective factors skimmed dairy products.

## Contd...

- Purine rich diet is a common but minor cause of Hyperuricaemia.
- Diet alone is not sufficient to cause hyperuricemia.
- Foods high in purine may be more potent in exacerbating hyperuricemia.

## Contd...

- Dietary purine usually contribute only 1mg/dL to the serum uric acid.
- A High liquid intake & daily urinary output of 2L or more will aid urate excretion and minimize urate precipitation.

# What's allowed and what's not

- In management of hyperuricemia, it is essential to reduce foods that are high in purine.
- Daily purine intake should be between 100-150mg.



## Contd...

- High purine diet (150-825mg purine/100gm) - should be avoided.
- Moderate purine diet (50-150mg purine/100gm) - take in restricted amount.
- Low purine diet(0-50 mg purine/100gm) - can be taken without limit.





1



Limit the intake of foods that stimulate the production of uric acid such as fatty fish, shell fish, meat, eggs and caffeine. It increases the production of uric acid.

2



During acute attack white flour, yeast products like bread should be avoided.

3



Do not consume leafy vegetables like spinach, cabbage, broccoli etc.

4



Avoid alcohol- It increases the production of uric acid.

5



Keep away yourself from cakes, pastries, sugar etc.

**AVOID THIS**

**Enjoy this without limit**



**Pineapple**



**Cherry Juice**



**Hot Peppers**

**Turmeric**



**Ginger**



**Watercress**



**Lemons**



# Contd...

## **The General principles of diet in Hyperuricemic condition.**

- Maintain body weight.
  - Prolong fasting or Rapid weight loss can cause temporary elevate SUA.
- More complex carbs.
  - Eat more fruits, vegetables and whole grains.
  - Avoid foods such white bread, cakes, candy, sweetened beverage and high fructose corn syrup.



# Contd...

- More water.
  - Aim for eight to 16 glasses of fluid per day.
  - At least half that as Water.
- Cut back on saturated fats
  - Limit your daily protein from organ meat or red meat.
  - Try to add low fat or fat free dairy product.
  - Limit alcohol and Beer.
- Add vit. C, moderate coffee and cherries in dietary plan.
- Make change in medication.

# Conclusion

- Food is not just calories, it is information, it talks to your DNA and tells it what to do.
- The most powerful tool to change your health is food, which is in your fork.
- True health care reform starts in your kitchen, not in Washington.



**Thank You All**