# SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

***Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai***
***Approved by Pharmacy Council of India, New Delhi.***
**Coimbatore -641035**

COURSE NAME : MEDICINAL CHEMISTRY II

B.PHARM/ III YEAR

TOPIC:DIURETICS

## DESIGN THINKING STAGES IN CLASSIFICATION

**Empathize:** Understand the users — in this case, students, pharmacists, or researchers who use the alphabetical classification system.

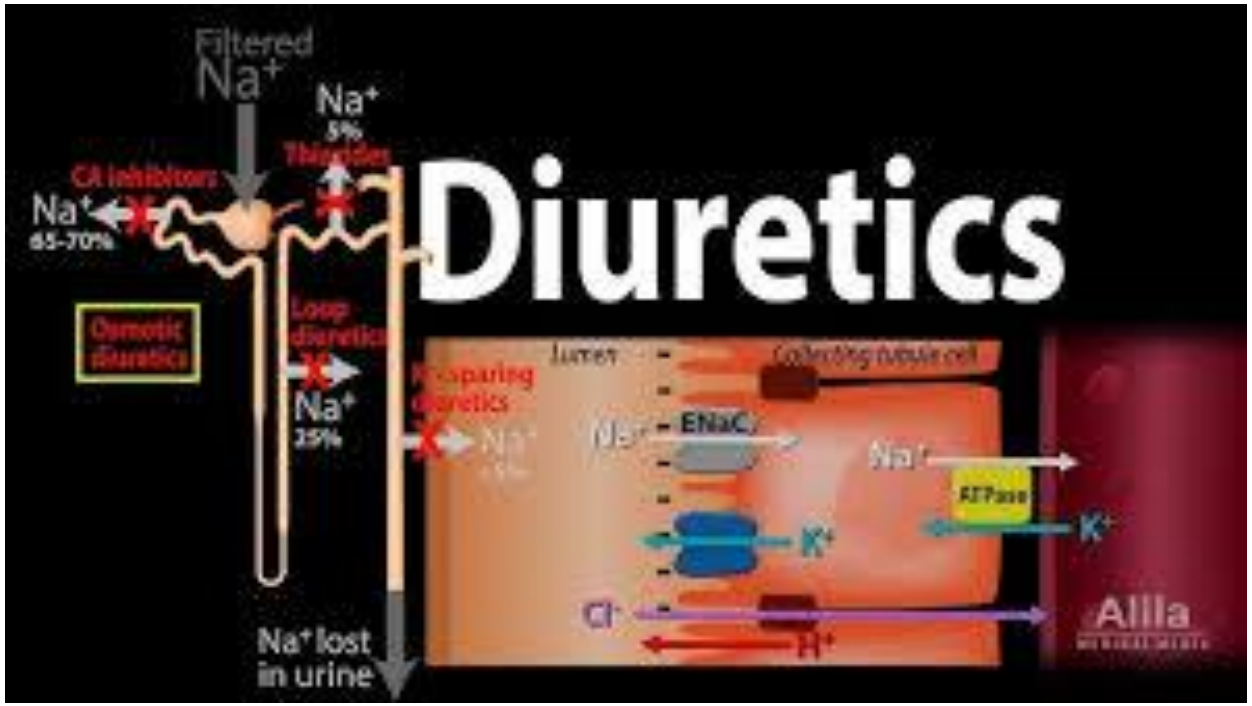
**Define:** Clearly define the problem based on the insights from the empathize stage.

**Ideate:** Generate possible solutions or improvements.

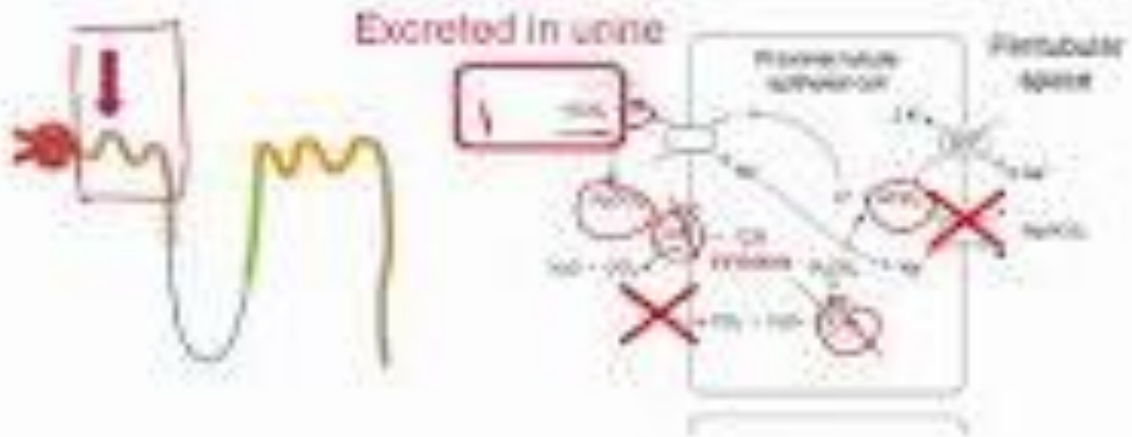
**Prototype:** Create a tangible version of your solution

**Test:** Evaluate the prototype with real users.

# INTRODUCTION



# Carbonic Anhydrase Inhibitors
## MOA



# MECHANISM OF ACTION

Carbonic anhydrase inhibitor
(e.g. Acetazolamide)

↓

Blocks carbonic anhydrase enzyme in PCT

↓

Decrease Formation of $H^+$ and $HCO_3^-$ inside tubule cell

↓

Decrease $Na^+/H^+$ exchange

↓

Decrease $Na^+$ reabsorption

↓

Increase $Na^+$, $HCO_3^-$, and water in urine

↓

Increase Urine output (diuresis)

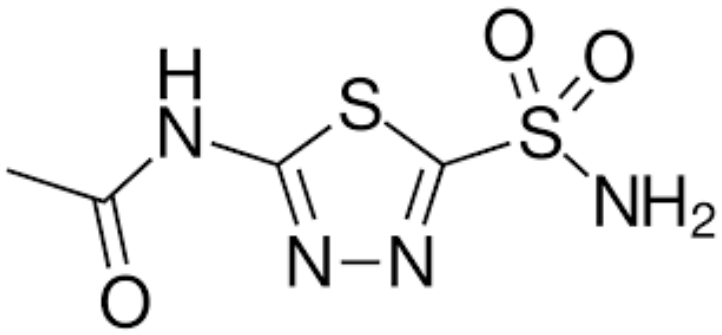
↓

Urine → alkaline
Blood → metabolic acidosis

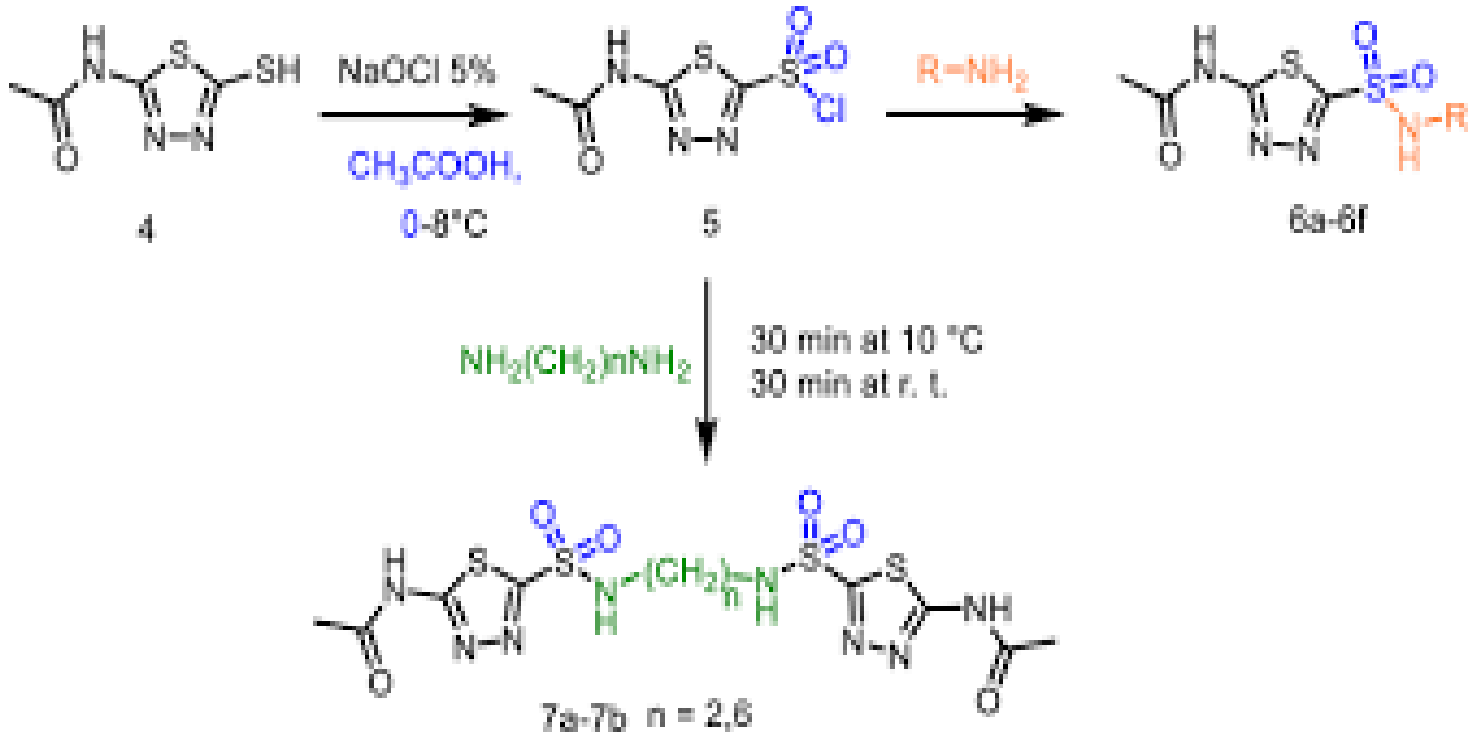
# ACETAZOLAMIDE

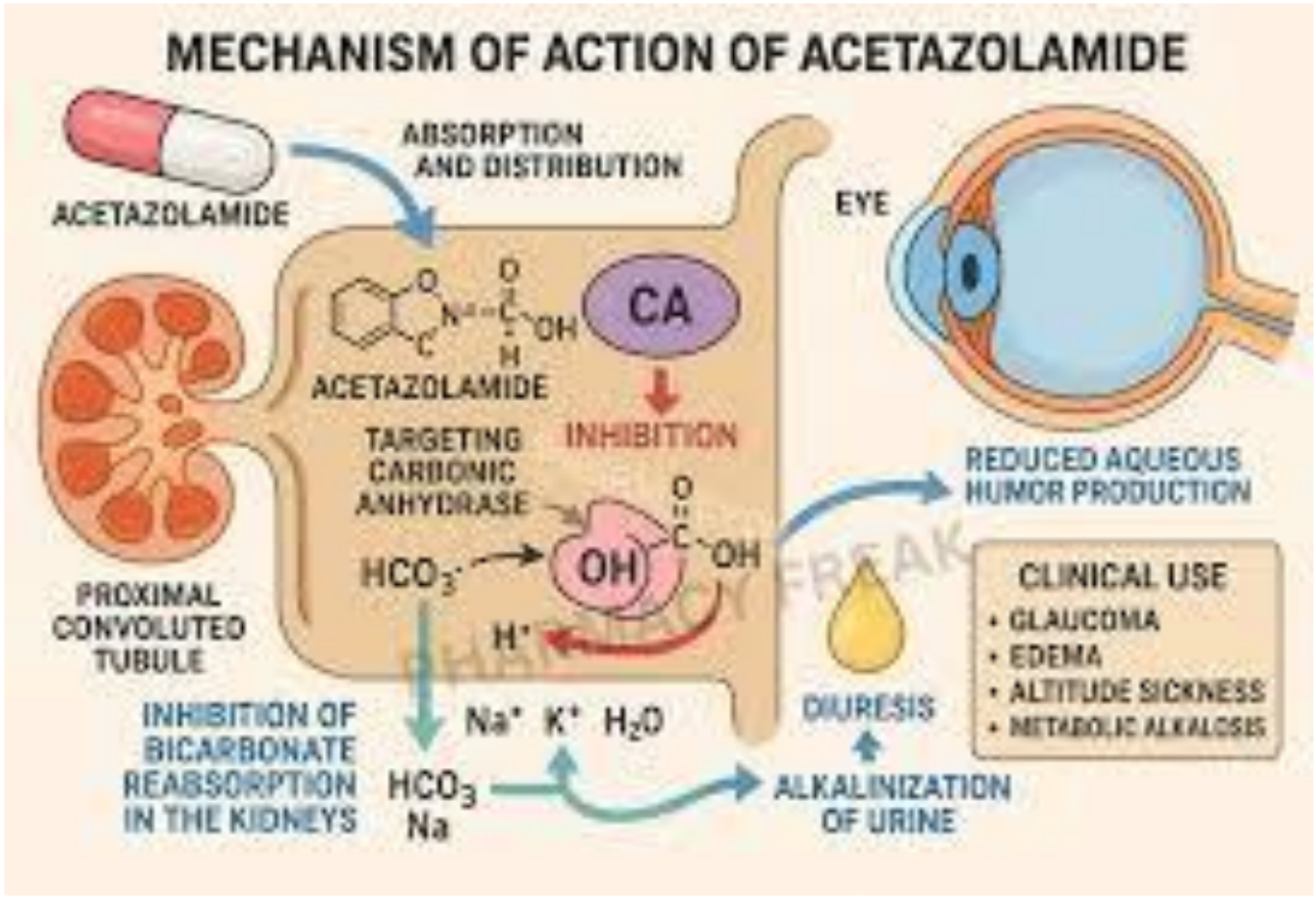
www.snsgroups.com

## *STRUCTURE*

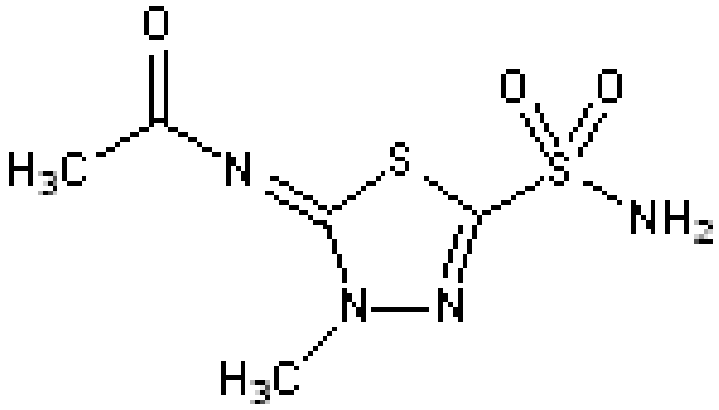


## *SYNTHESIS*

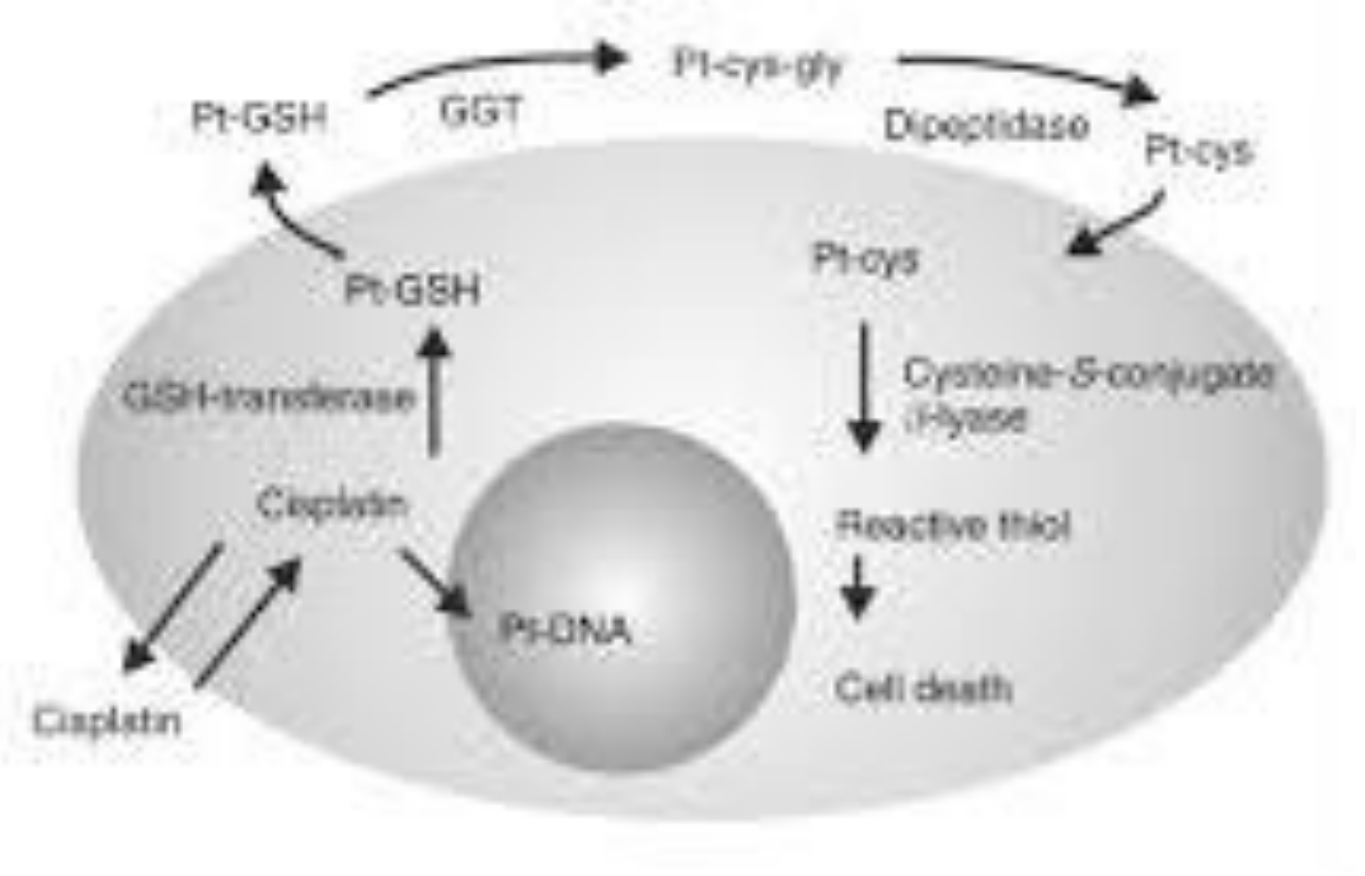



MECHANISM OF ACTION OF ACETAZOLAMIDE
ACETAZOLAMIDE
ABSORPTION AND DISTRIBUTION
EYE
CA
ACETAZOLAMIDE
TARGETING CARBONIC ANHYDRASE
INHIBITION
REDUCED AQUEOUS HUMOR PRODUCTION
$HCO_3^-$
OH
OH
$H^+$
PROXIMAL CONVOLUTED TUBULE
CLINICAL USE
• GLAUCOMA
• EDEMA
• ALTITUDE SICKNESS
• METABOLIC ALKALOSIS
INHIBITION OF BICARBONATE REABSORPTION IN THE KIDNEYS
$Na^+$ $K^+$ $H_2O$
DIURESIS
$HCO_3$ Na
ALKALINIZATION OF URINE

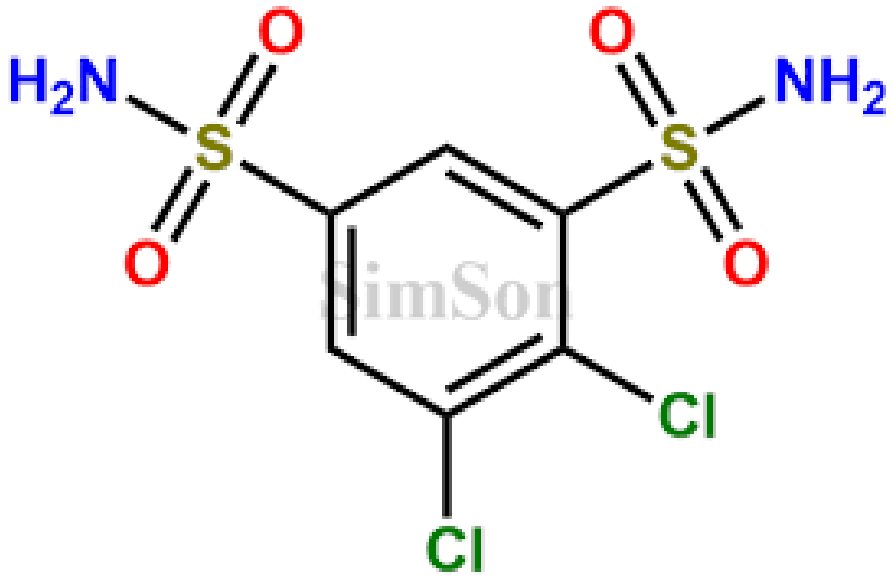
# METHAZOLAMIDE



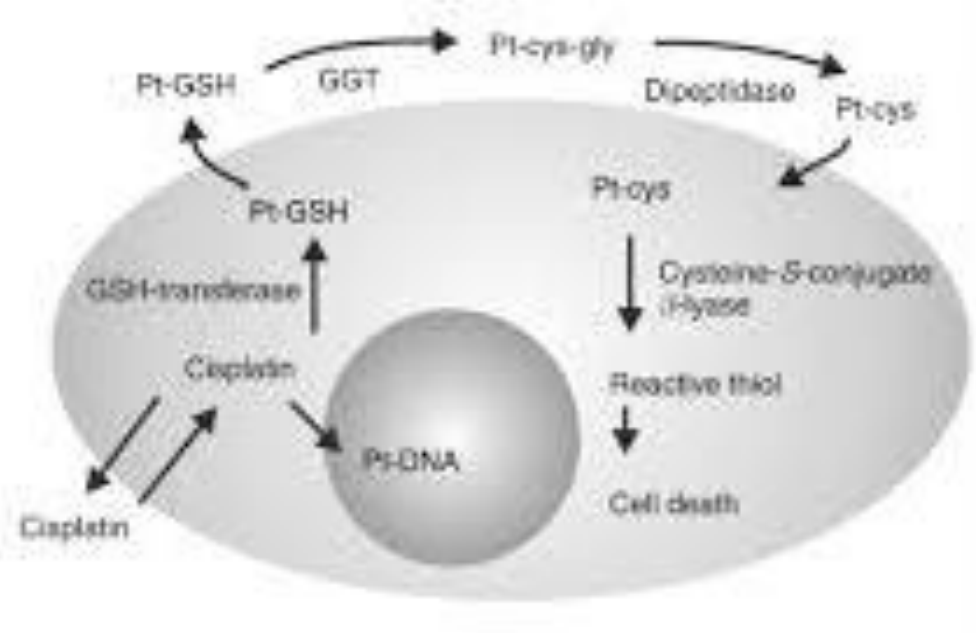
# MECHANISM OF ACTION



# DICHLORPHENAMIDE



# MECHANISM OF ACTION



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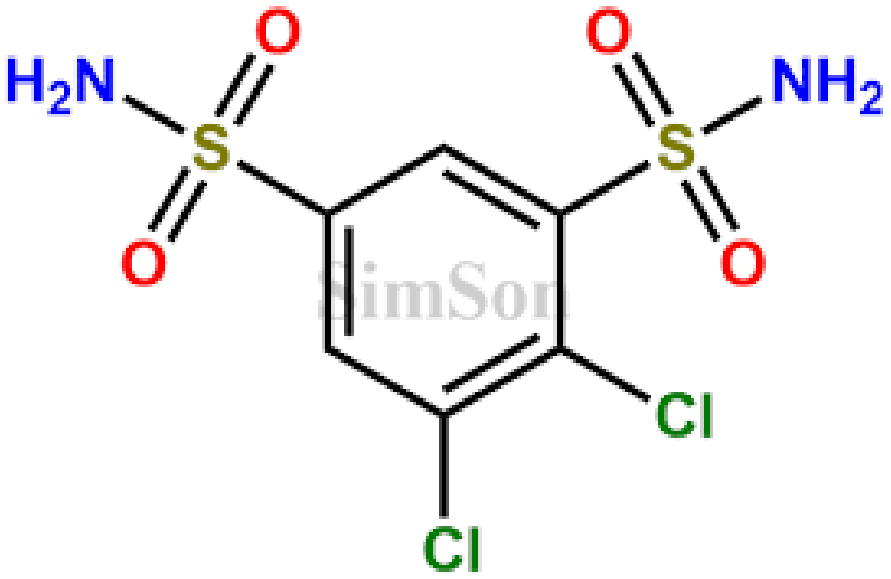
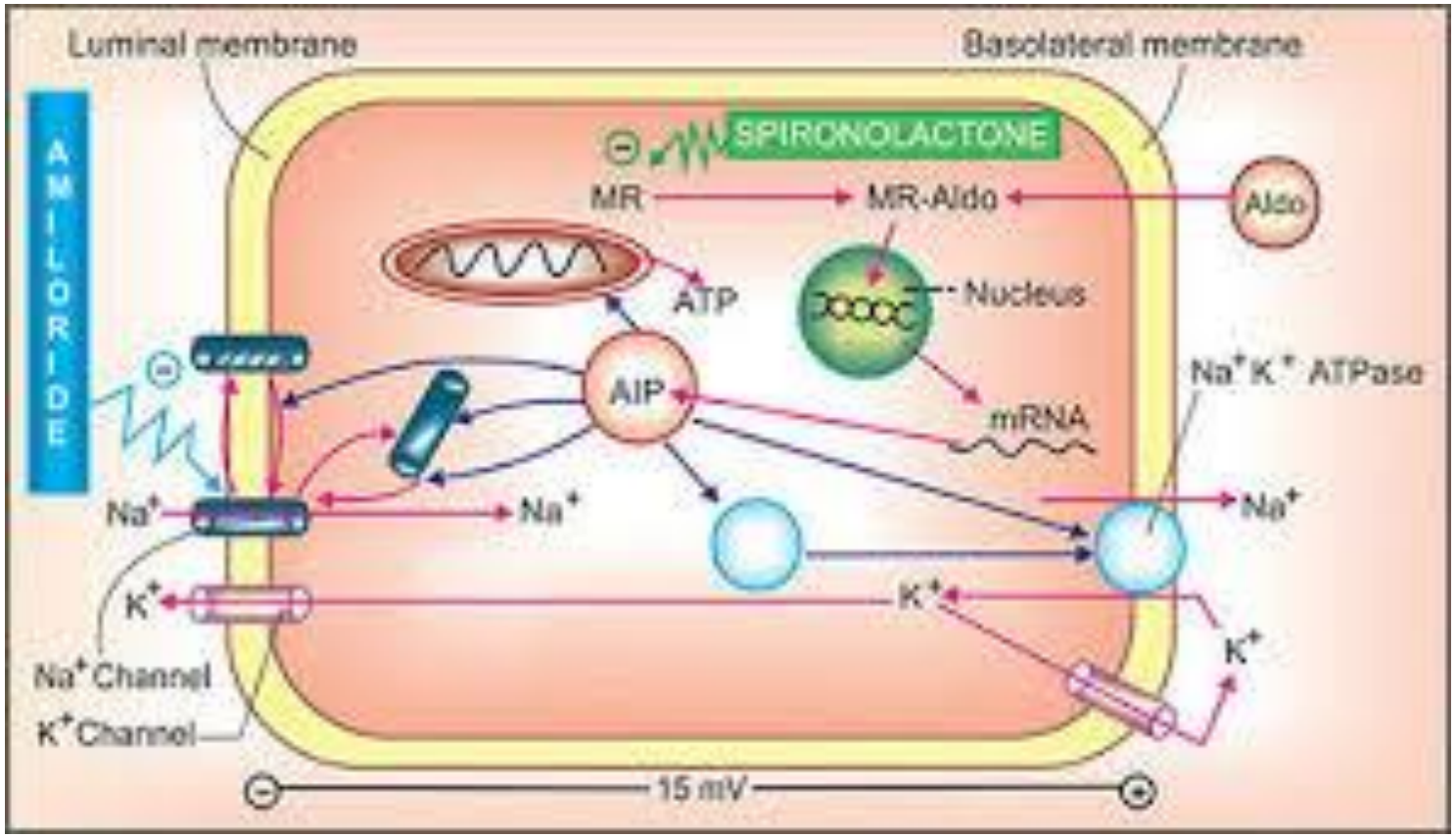
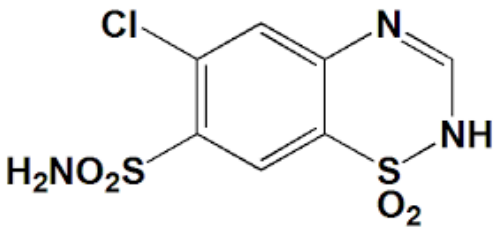


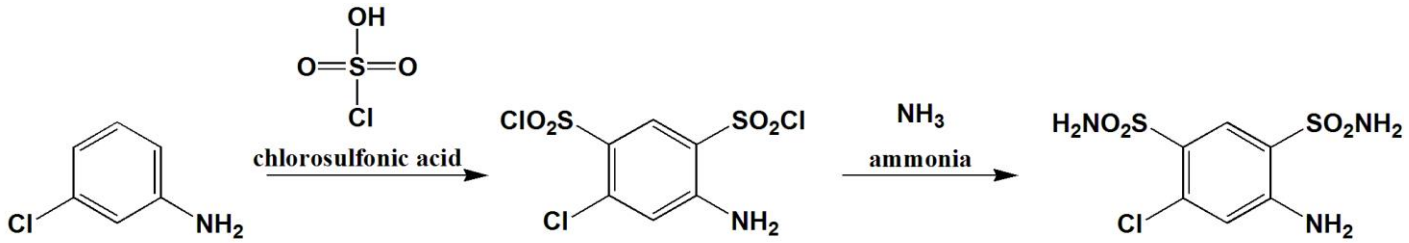
# MECHANISM OF ACTION



# THIAZIDES



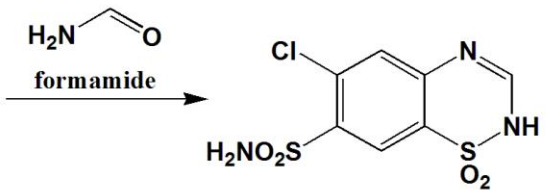

Chlorothiazide




3-chloroaniline

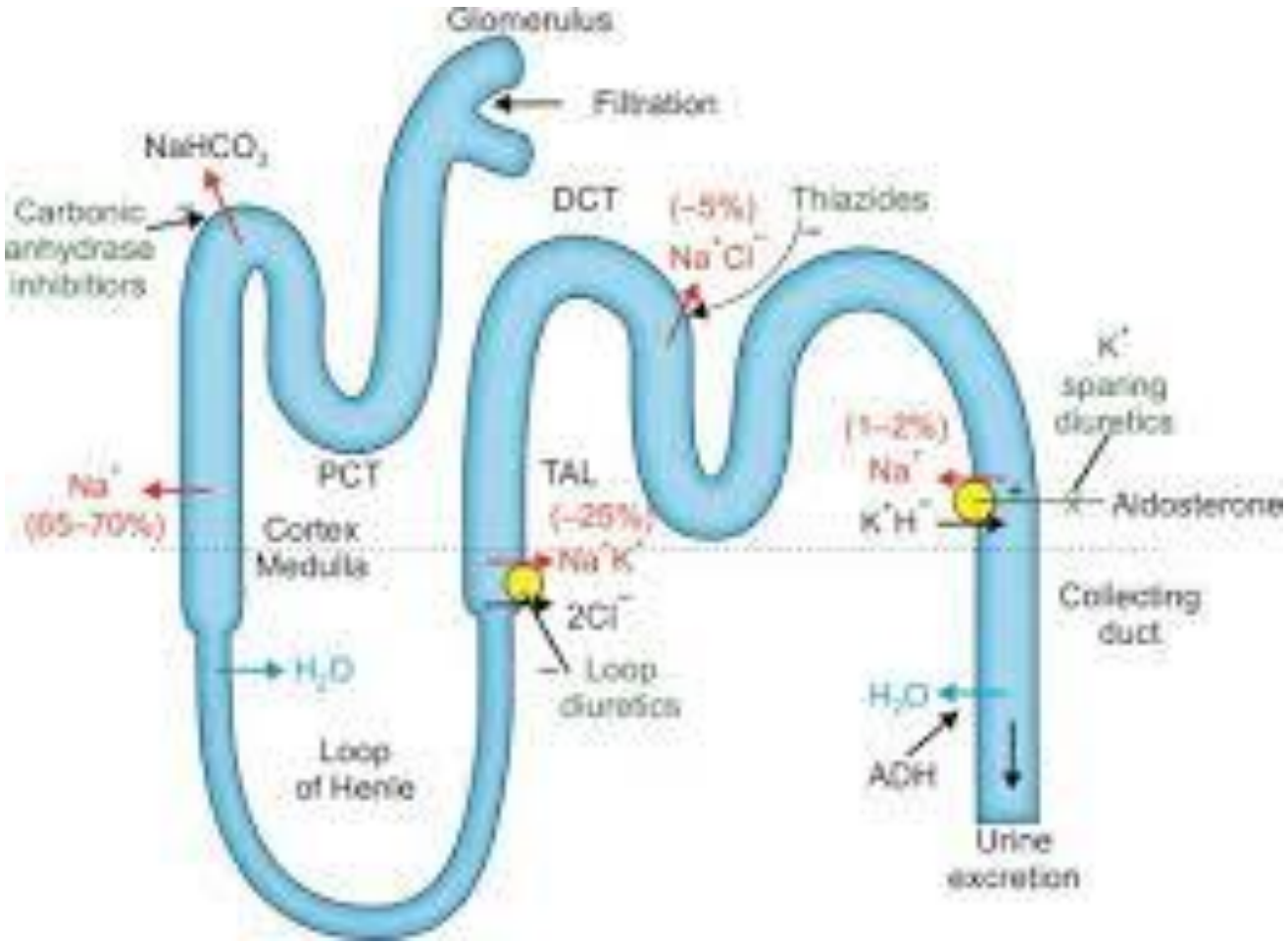
4-amino-6-chlorobenzene-1,3-disulfonyl dichloride

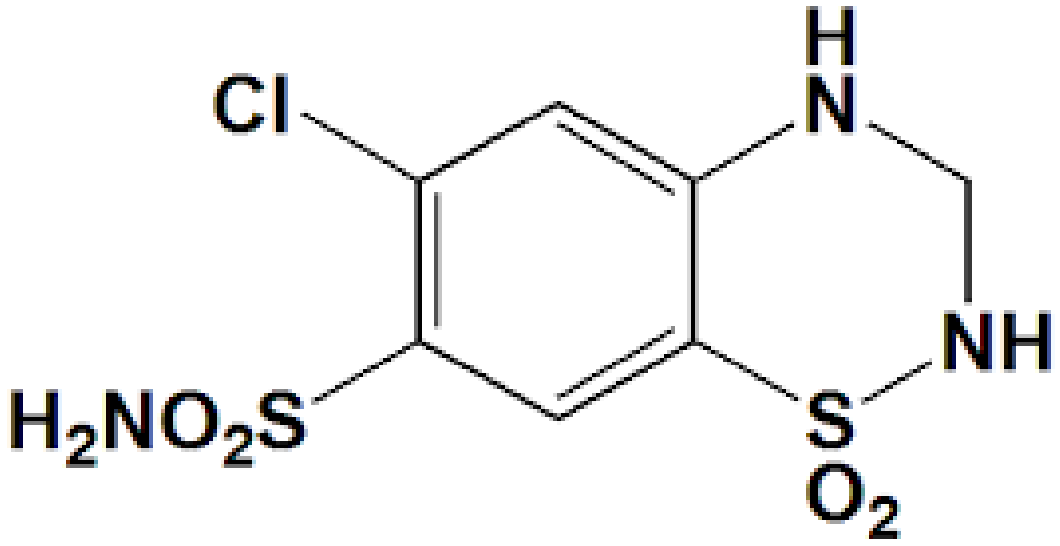
4,6-sulfonylamido-3-chloroaniline




Chlorothiazide

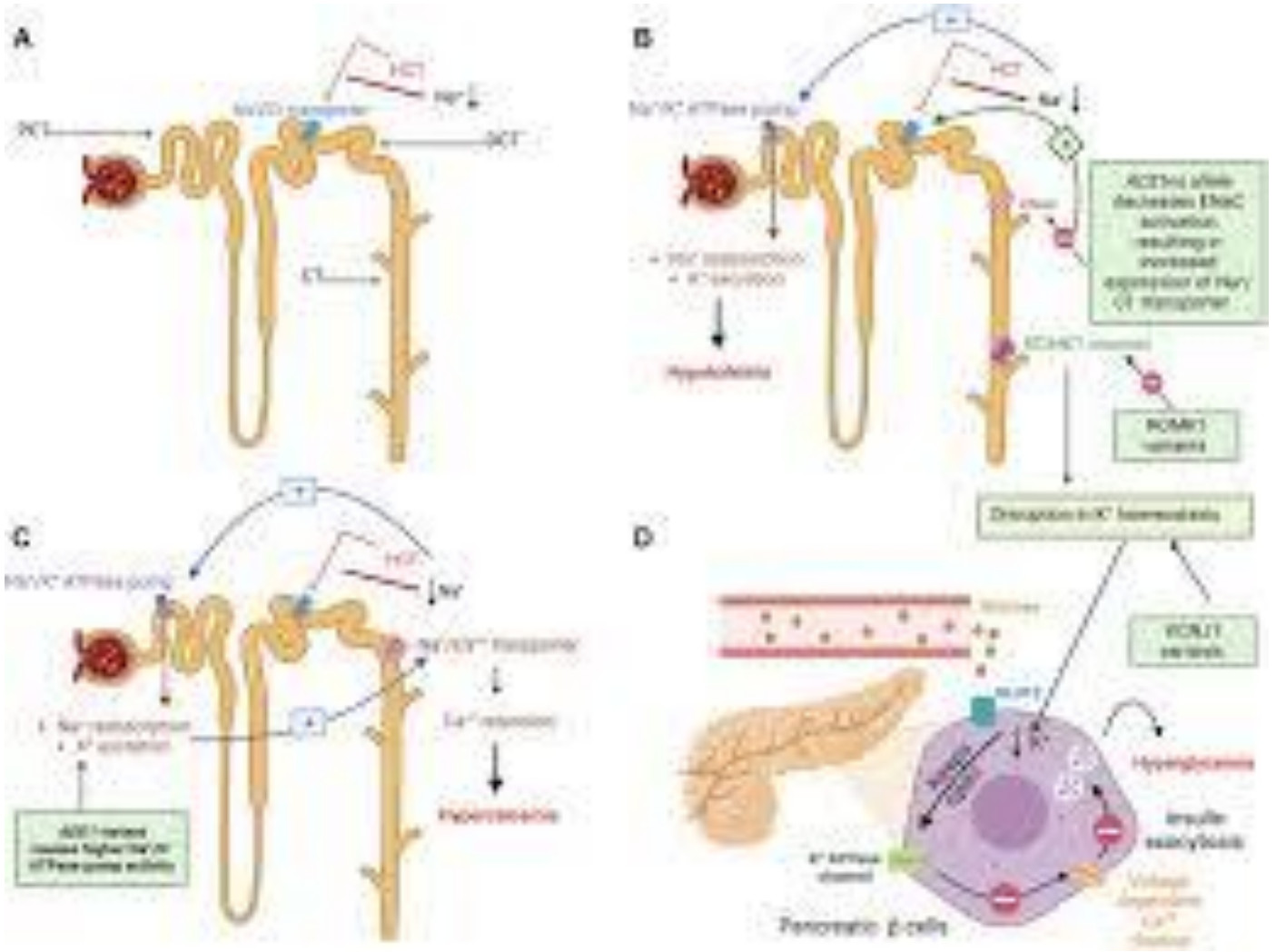
# MECHANISM OF ACTION



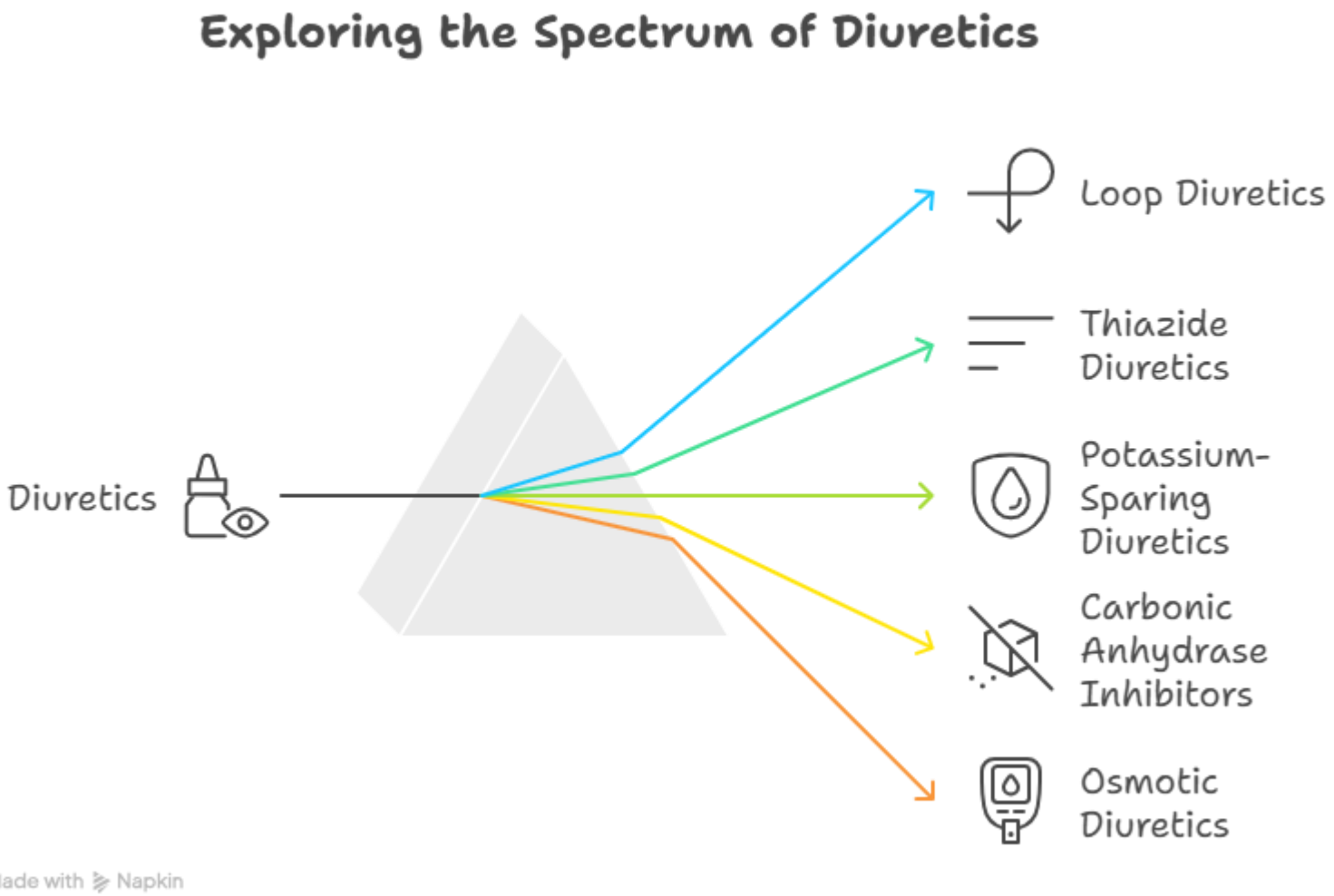



Hydrochlorothiazide

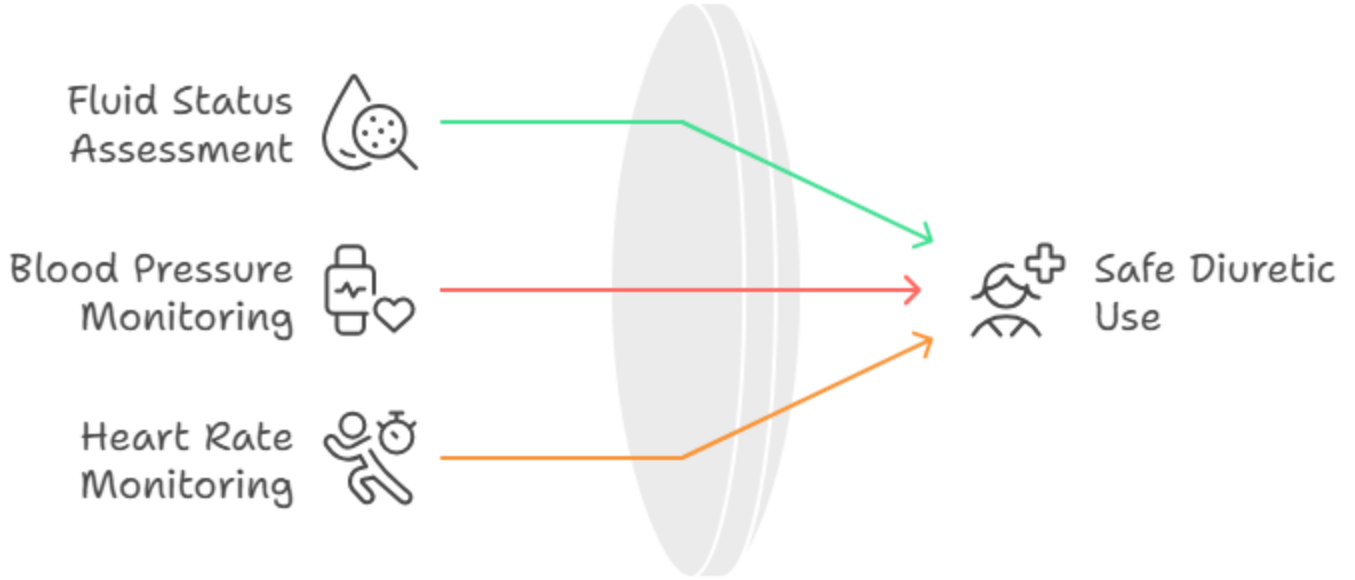
# MECHANISM OF ACTION



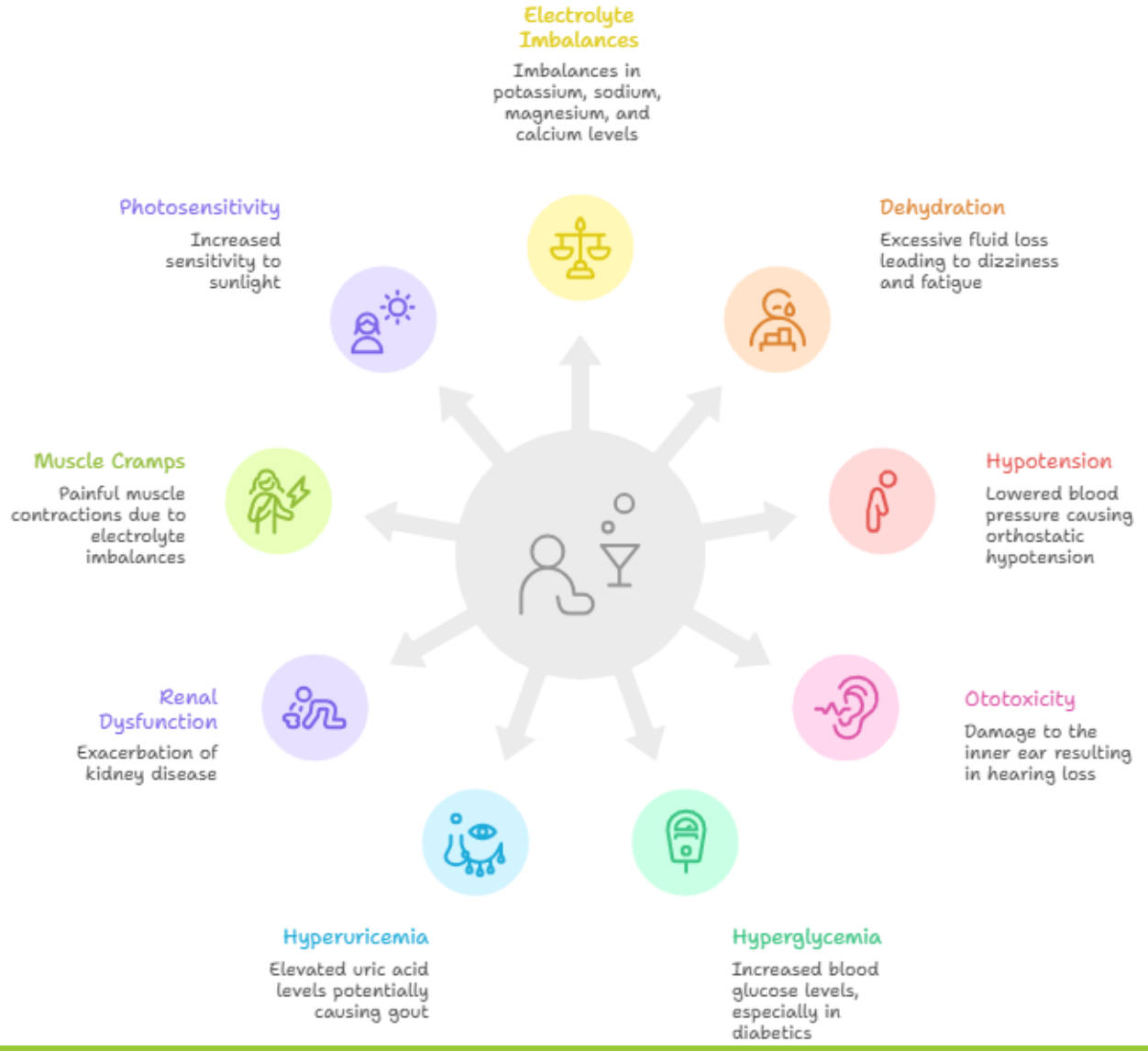
# ASSESMENT


Exploring the Spectrum of Diuretics
Diuretics
Loop Diuretics
Thiazide Diuretics
Potassium-Sparing Diuretics
Carbonic Anhydrase Inhibitors
Osmotic Diuretics
Made with Napkin

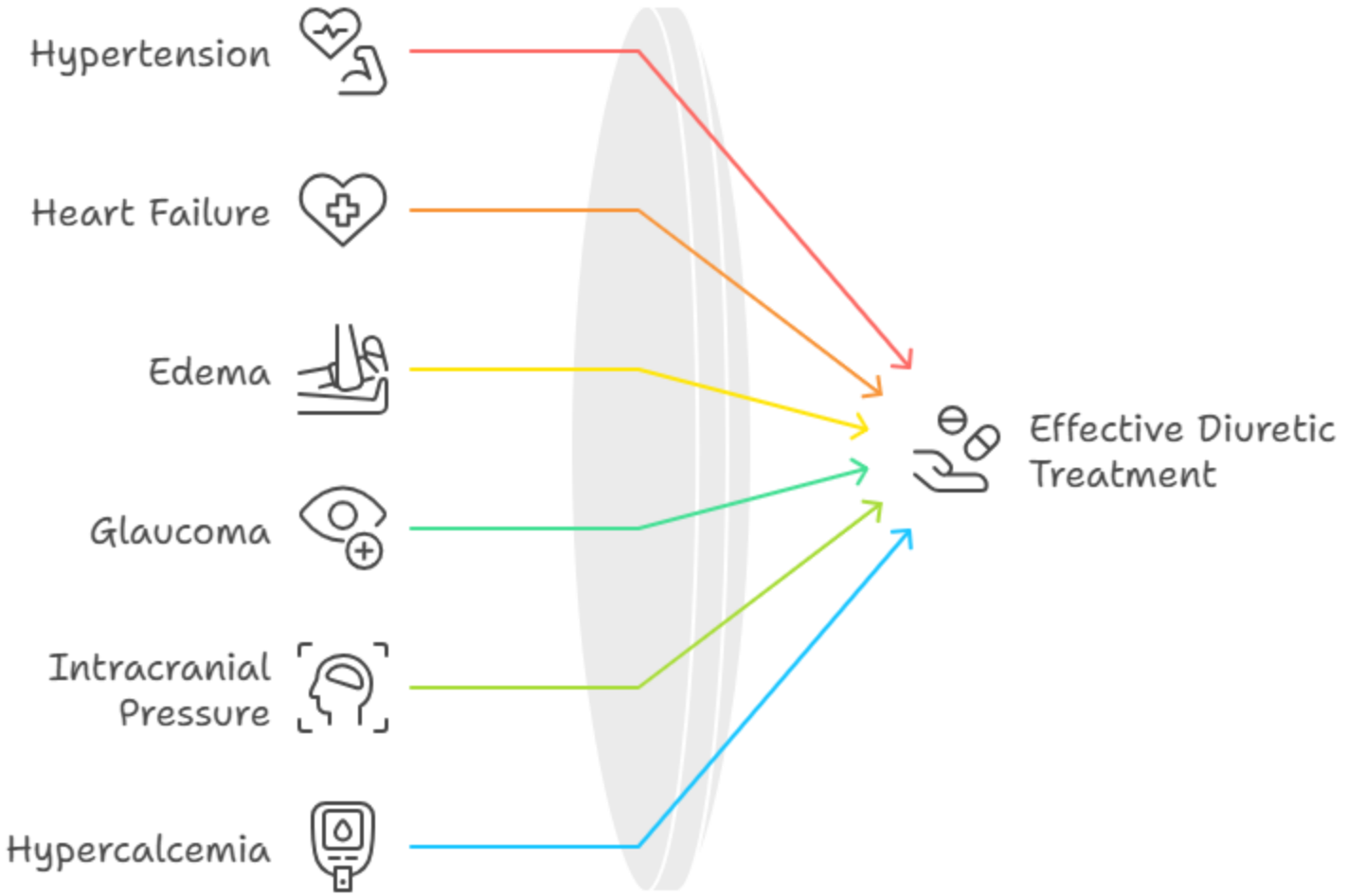
# Comprehensive Diuretic Management



# Diuretic Adverse Effects



# Diverse Applications of Diuretics



# REFERENCES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2. Wilson, C.O., Gisvold, O., and Block, J.H. *Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry*, 12th Edition, Lippincott Williams & Wilkins.

3. Patrick, G.L. *An Introduction to Medicinal Chemistry*, 7th Edition, Oxford University Press.

4. Thomas, G. *Fundamentals of Medicinal Chemistry*, John Wiley & Sons.

5. Singh, H. and Kapoor, V.K. *Medicinal and Pharmaceutical Chemistry*, Vallabh Prakashan, New Delhi.


Thank You