**Pharmacology Assignment**

**Submited by: Syed Shahzad Ali Shah**

**Student ID: 14449**

**Submitted to: Ma’am Nadra**

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**Question: Discuss various drugs classes used for Hypertension Cardiac Heart Failure.**

**ANS: Drugs Used For Hypertension:** All antihypertensive agentsproduce their effects by interfering with normal mechanisms of blood pressure regulation. A useful classification of these agents categorizes them according to the principal regulatory site or mechanism on which they act. All antihypertensive drugs have approximately common mechanisms of action, The categories include the following:

1. **Diuretics:** which lower blood pressure by depleting the body of sodium and reducing blood volume and perhaps by other mechanisms.

**e.**g: Thiazide diuretics, chlorthalidone, Potassium-sparing diuretic ETC

1. **Sympathoplegic agents:** which lower blood pressure by reducing peripheral vascular resistance, inhibiting cardiac function, and increasing venous pooling in capacitance vessels. (The latter two effects reduce cardiac output).

**e.**g: Methyldopa, clonidine, Guanabenz, guanfacine ETC

1. **Direct vasodilators:** which reduce pressure by relaxing vascular smooth muscle, thus dilating resistance vessels and—to varying degrees—increasing capacitance as well.

**e.**g; Nitroprusside, hydralazine, nitrates, histamine, acetylcholine, Verapamil, diltiazem, nifedipine.

1. **Agents that block production or action of angiotensin** and thereby reduce peripheral vascular resistance and (potentially) blood volume.

**e.g**: Losartan, Captopril ETC.

***Drugs Used in Heart Failure:***Heart failure is a progressive disease that is characterized by a gradual reduction in cardiac performance, punctuated in many patients by episodes of acute decompensation, often requiring hospitalization. Treatment is therefore directed at two somewhat different goals: (1) reducing symptoms and slowing progression as much as possible during relatively stable periods and (2) managing acute episodes of decompensated failure. The following Drugs are used for Heart failure:

1. **DIURETICS:** Decreases NaCl and KCl reabsorption in nephron.

**e.g:** Furosemide, Hydrochlorothiazide ETC

1. **ALDOSTERONE ANTAGONISTS**: Blocks cytoplasmic aldosterone receptors in collecting tubules of nephron.

 **e.g:** Spironolactone, Eplerenone ETC

1. **ANGIOTENSIN ANTAGONISTS:**

 Angiotensin-converting enzyme (ACE) inhibitors: Captopril

Angiotensin receptor blockers (ARBs): Losartan ETC

1. **BETA BLOCKERS:** Competitively blocks β1 receptors **e.g:** Carvedilol, Metoprolol, bisoprolol, nebivolol. ETC
2. **CARDIAC GLYCOSIDE:** Na+/K+-ATPase inhibition results in reduced Ca2+ expulsion and increased Ca2+ stored in sarcoplasmic reticulum.

**E,g:** Digoxin ETC.