1. Clonidine:

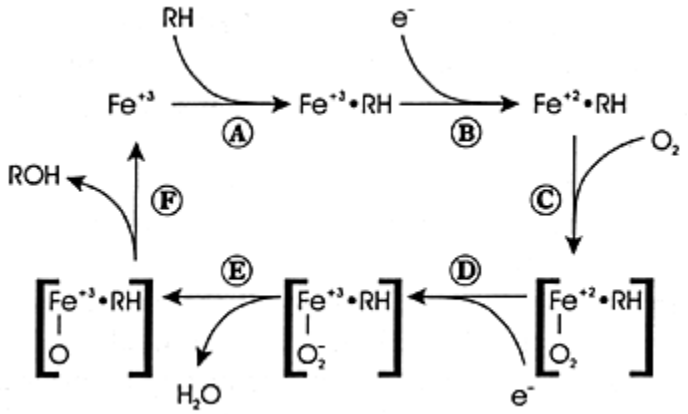
pharmacodynamics: Clonidine is an α-adrenergic agent that acts specifically on α_2-receptors. α_2-receptors regulate a number of signaling pathways mediated by multiple G_i proteins, $G\alpha_{i1}$, $G\alpha_{i2}$, and G&alpha$_i$[1]

Pharmacokinetics: The plasma level of clonidine peaks in approximately 3 to 5 hours and the plasma half-life ranges from 12 to 16 hours. The half-life increases up to 41 hours in patients with severe impairment of renal function. Following oral administration about 40-60% of the absorbed dose is recovered in the urine as unchanged drug in 24 hours. About 50% of the absorbed dose is metabolized in the liver. Neither food nor the race of the patient influences the pharmacokinetics of clonidine.[2]

2.CYP2C9:

i. CYP2C9 plays a major role in the metabolism of NSAIDs e.g. ibuprofen, naproxen, oral hypoglycemic, oral anticoagulants, diuretics, uricosurics, angiotensin 2 blockers,anticonvulsants and others.[3]

ii. Mechanism of catalysis:



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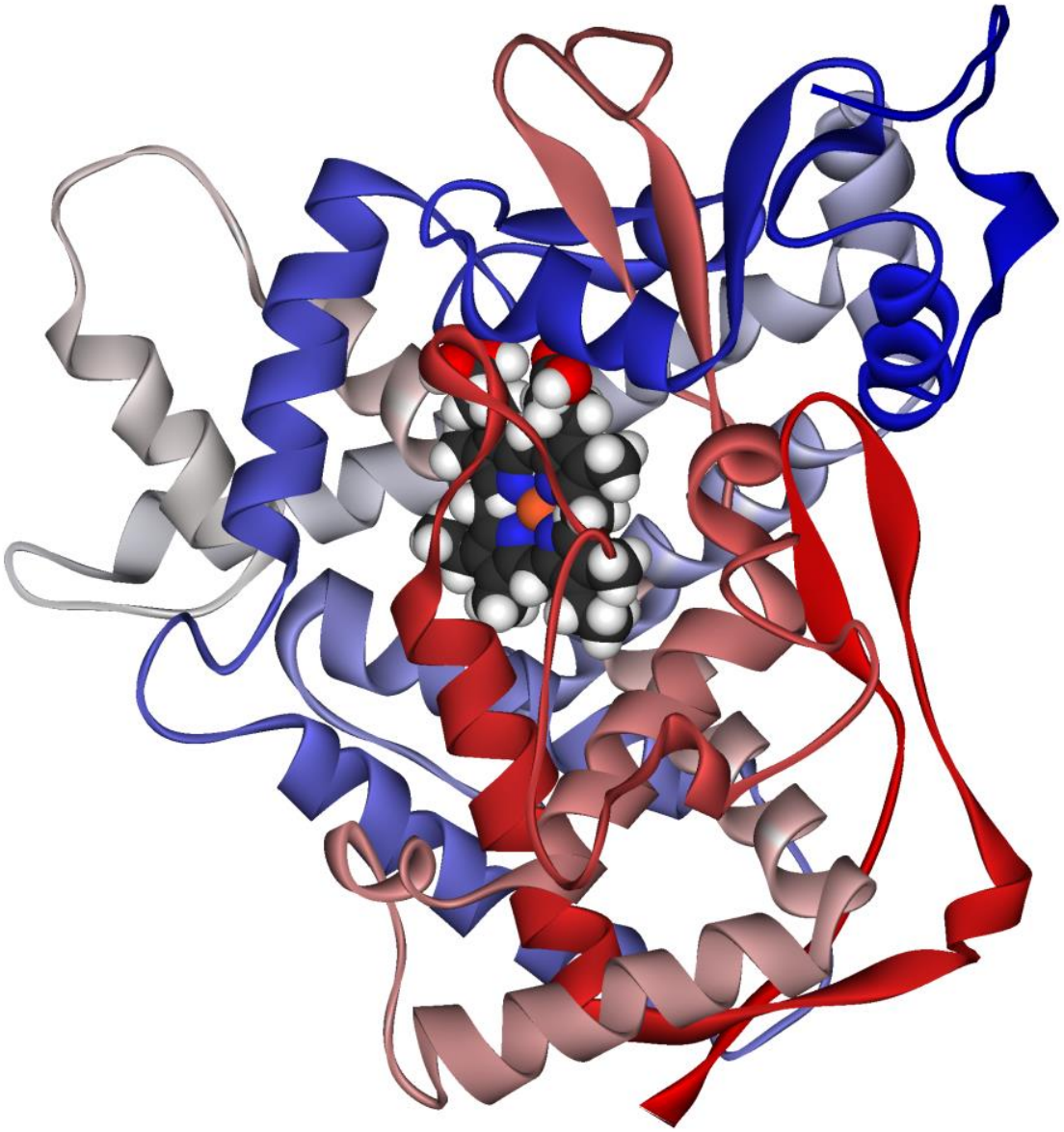
iii. CYP2C9 inhibitors: Diclofenac, Fluoxetine, Flurbiprofin, Phenytoin, Tolbutamide, S-Warfarin[5]

iv.



v. Kinetic parameters: K_m (HPLC)= 12.4 V_{max} (HPLC)= 5.22[7]

3.

a. Pharmacokinetics and pharmacodynamics differ in men and women. Pharmacokinetics in women is affected by lower body weight, slower gastrointestinal motility, less intestinal enzymatic activity, and slower glomerular filtration rate.[8] Pharmacodynamics in women include greater sensitivity to certain drugs and higher rate of adverse drug reactions.

Women tend to respond better to SSRIs where as men respond better to cyclic antidepressant medication.
Beta blockers in women have a greater effect and lead to greater reductions in BP.

Women have a much higher likelihood of adverse drug effects (50-75% higher than men)[9]

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References:

1. DrugBank: Clonidine (DB00575). (n.d.). Retrieved from http://www.drugbank.ca/drugs/DB00575

2.Catapres (Clonidine) Drug Information: Clinical Pharmacology - Prescribing Information at RxList. (n.d.). Retrieved from http://www.rxlist.com/catapres-drug/clinical-pharmacology.htm

3. Casarett, L. (2008). Casarett and Doull's toxicology: The basic science of poisons (6th ed., Vol. 7, pp. 239-240). New York, New york: McGraw-Hill Medical Pub. Division.

4. Clinical Pharmacology of SSRI's: Why Are CYP Enzymes Important When Considering SSRIs?. (n.d.). Retrieved from http://www.preskorn.com/books/ssri_s7.html

5. Casarett, L. (2008). Casarett and Doull's toxicology: The basic science of poisons (6th ed., Vol. 7, pp. 239-240). New York, New york: McGraw-Hill Medical Pub. Division.

6. File:CYP2C9 1OG2.png - Wikimedia Commons. (n.d.). Retrieved May 6, 2015, from http://commons.wikimedia.org/wiki/File:CYP2C9_1OG2.png

7.Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub. 2005, 149(2):353–5. © E. Anzenbacherová, A. Veinlichová, V. Mašek, P. Anzenbacher

8. http://www.aafp.org/afp/2009/1201/p1254.html

9. . Rademaker M. Do women have more adverse drug reactions? Am J Clin Dermatol. 2001;2(6):349–351.