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| --- | --- | --- | --- | --- | --- |
| Drug | Metabolism/  Excretion | Side effects | Levels (ng/ml) | Interactions | |
| Incr levels | Decr levels |
| Cyclosporine (Gengraf,  Sandimmune, Neoral)  25,50,100mg tabs BID | Liver P450  Excrete – biliary  decr dose for liver dysfxn | **HTN**, nephropathy, causes skin CA, neuro, glucose intolerance, GI, hepatotoxicity, lymphoma, serum conc’n of statins and pradaxa, gingival hyperplasia, HUS/TTP, osteoporosis | <3 mos – 125-150  4-6 mos - 75-125  >6 mos - 50-75  combo w/ rapa:  25-75 | abx: Flagyl, Azoles Macrolides  Cardiac: CCBs,  Amio, Coreg  Glyburide  Diamox  Solumedrol  omeprazole  Protease inh  sirolimus | Vit C  Aripiprazole  Efavirenz  Echinacea  Imipenem  Nafcillin  prednisone |
| Tacrolimus (Prograf)  0.5,1,5mg tabs BID | Liver P450  Excrete – feces  follow levels for liver dysfxn | DM2, HTN, neuro, GI nephropathy (less than cyclo), causes skin CA, can enhance QT prolonging drugs, I serum conc’n of pradaxa and rivaroxaban | <3mos: 8-12  4-6mos: 6-10  >6mos: 5-8  combow/ rapa: 4-8 | SSRIs  abx: caspofungin, azoles, flagyl  Cardiac: CCBs,  Protease inh  PPIs | Aripiprazole  Efavirenz  Echinacea  St. John’s wart |
| Mycophenolate Mofetil (CellCept) 250,500mg BID  Mycophenolate Na  (Myfortic) 250,500mg BID | 94% oral BioA  Liver/pre-systemic  Excrete – urine/feces  72% oral BioA | Diarrhea, HTN, leucopenia, rash  Less diarrhea | CBC  (goal > 3.5) | val/acyclovir  val/gancyclovir | cholestyramine  cyclosporine  Echinacea  abx: flagyl, PCN, quinolones  PPIs  sevelamer |
| Sirolimus (Rapamune) 0.5,1,2mg tabs DAILY | Liver P450  Excrete – feces  decr dose for liver dysfxn | HL (TG, TC), cytopenia, HUS/TTP, GI, canker sores, proteinuria, edema, pneumonitis | Not used 0-6 mos  >6mos: 5-10  Combo w/ CNI  4-8 | azoles  abx: rifampin, macrolides  protease inh | Echinacea  efavirenz  fosphenytoin |
| Azathioprine (Imuran)  50 mg tabs, DAILY | Liver to 6-MP  Excrete – urine  decr dose for renal/liver dysfxn | leucopenia, N/V, diarrhea, hepatotoxic, Sweet’s syndrome, HSTCL, diminishes warfarin effect, pancreatitis, hepatic VOD | WBC  (goal 3.5-6) | ACEi  ribavirin  allopurinol  bactrim | Echinacea |
| Prednisone |  | hyperglycemia | try to d/c by 1 yr |  |  |
| Methotrexate | excrete – urine | leucopenia, hepatotoxic | CBC, LFTs | abx: PCNs, quinolones, bactrim  cyclosporine  PPIs | echinacea |



0=No rejection; 1A =focal infiltrate without necrosis; 1B=diffuse but sparse infiltrate without necrosis; 2=one focus only with aggressive infiltrate and/or focal myocyte damage; 3A=multifocal aggressive infiltrate and/or myocyte damage; 3B=diffuse inflammatory process with necrosis

Calcineurin inhibitors (cyclosporine, tacrolimus) – inhibit calcineurin complex, leading to

decreased transcriptional activation of genes for IL-2, TNF-α, IL-3, IL-4, CD40L, GM-CSF, and IFN-γ 🡪 proliferation of lymphocytes is reduced. Act primarily on TH cells, also some inhibition of TS and TC cells

Cellcept/Myfortic – inhibits purine synthesis, effects T & B lymphocytes

Sirolimus – MTOR inhibitor, inhibits interleukin-2 mediated signal transduction 🡪 block the response of T- and B-cell activation by cytokines

Imuran – inhibits RNA&DNA synthesis