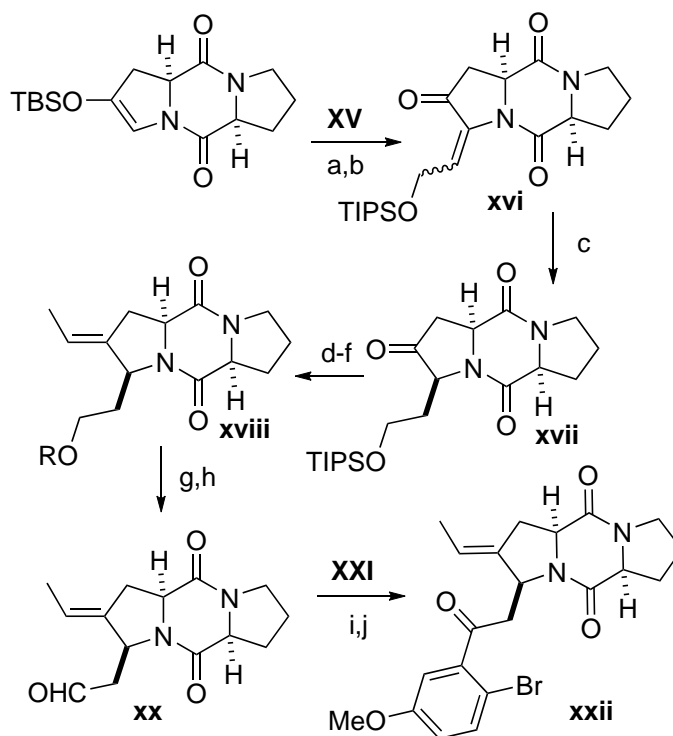
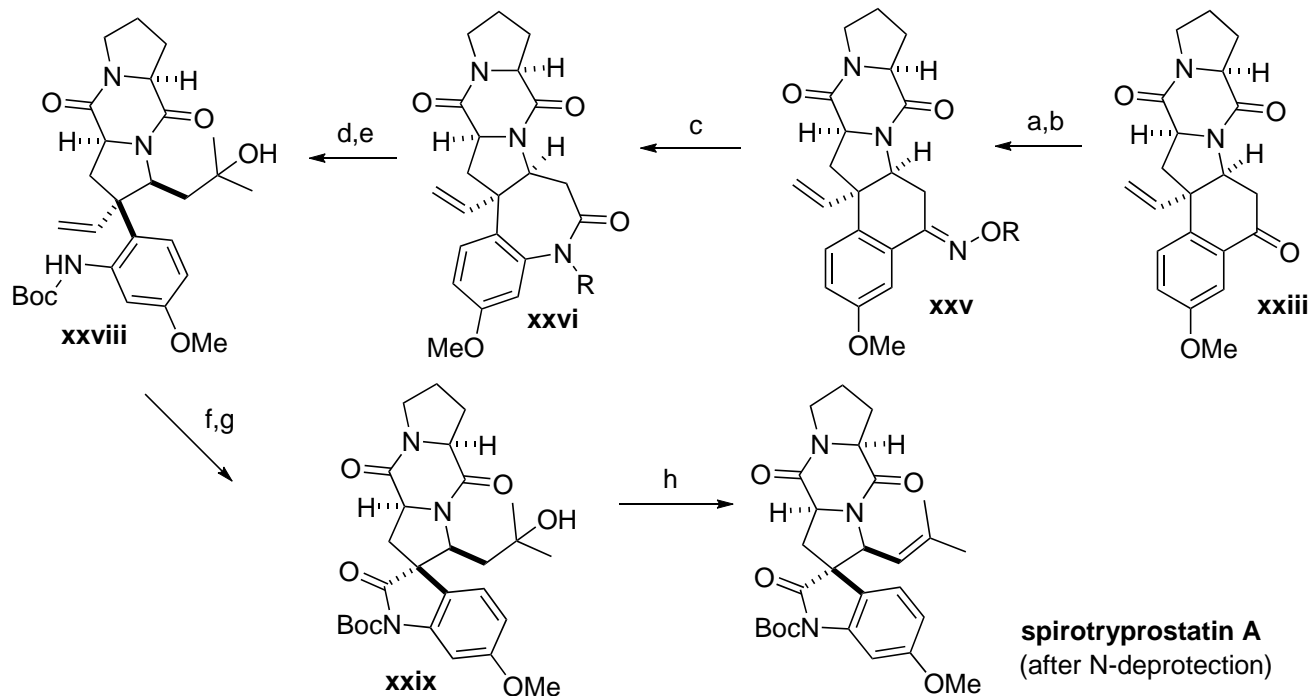


Scheme 2



Scheme 3



Scheme 4

S2. a) EDCl·HCl, Et₃N, DCM, rt, 90%; b) TEMPO, NaOCl, KBr, NaHCO₃, DCM, 0C, 90%; c) H₂, Pd/C, MeOH, rt; d) TsOH·H₂O, HC(OMe)₃, MeOH, 40C; e) H₂, Pd/C, MeOH, rt; f) HCl, acetone, rt, 87% (3 steps); g) TBSOTf, Et₃N, DCM, 0C, 99%.

S3. a) BF₃·OEt₂, DCM, -40C, 80%; b) Tf₂O, py, DCM, 0C, 87%; H₂, Pd/C, EyoAc, rt (dr 14:1); d) CH₂CHMgBr, THF, -78C; e) SOBr₂, py, DCM, -40C, 67% (3 steps); f) LiBHET₃, THF, -20C, 92%; g) HF·py, THF, rt, 97%; h) Dess-Martin periodinane, DCM, rt, 84%; i) **xxi**, THF, -78C; j) Dess-Martin periodinane, DCM, reflux, 84% (2 steps); k) Pd₂(dba)₃, (o-tol)₃P, Et₃N, toluene, reflux, 96%.

S4. a) NH₂OH·HCl, NaOAc, EtOH, 50C, 87%; b) MsCl, Et₃N, DCM, rt, 82%; c) TiCl₄, DCM, rt, 86%; d) Boc₂O, DMAP, MeCN, rt, 96%; e) MeLi, THF, -78C, 59%; f) O₃, MeOH, DCM, -78C; Me₂S; g) Jones reagent, acetone, 0C, 70% (2 steps); h) TsOH·H₂O, Na₂SO₄, toluene, reflux, 91%.