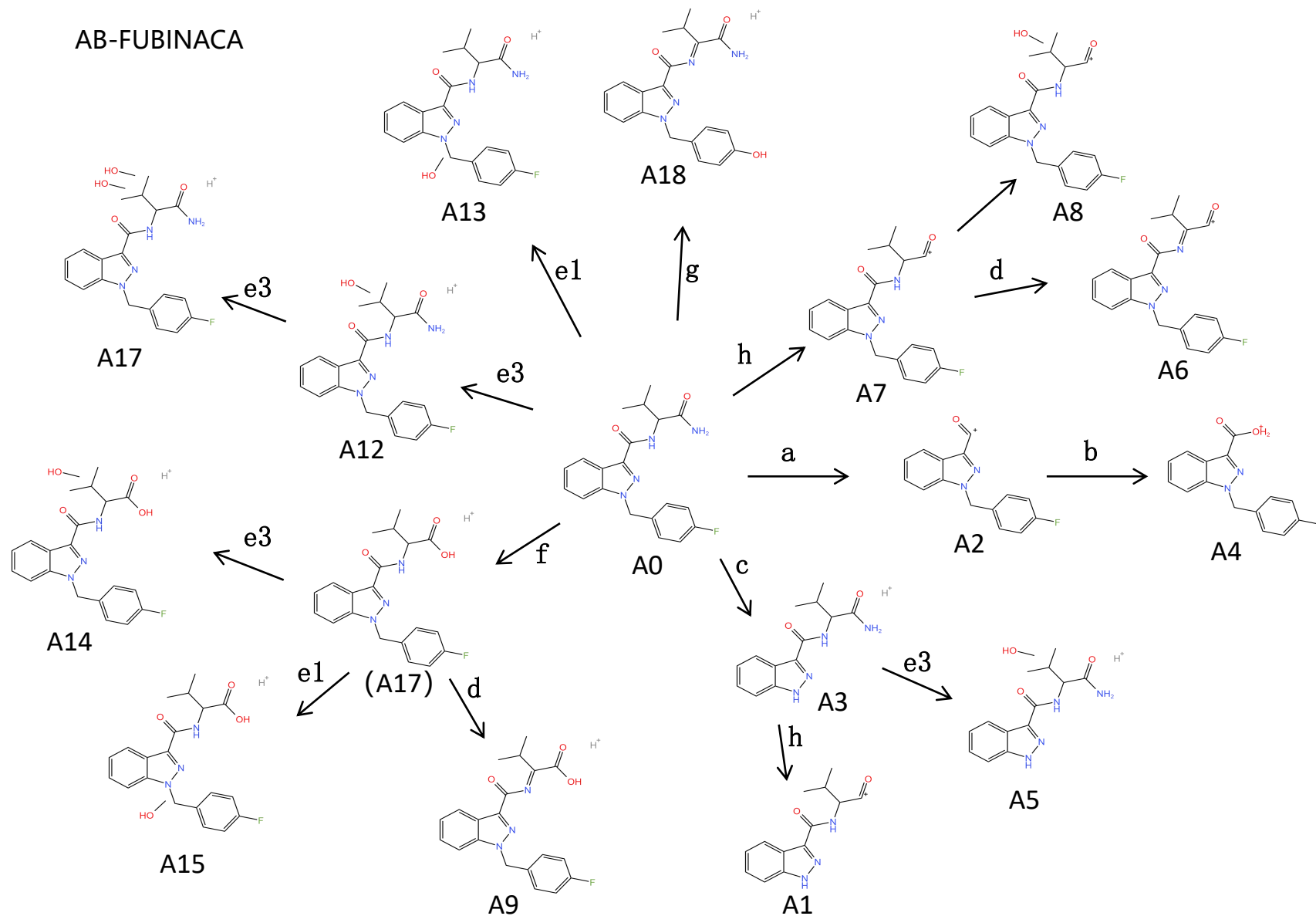
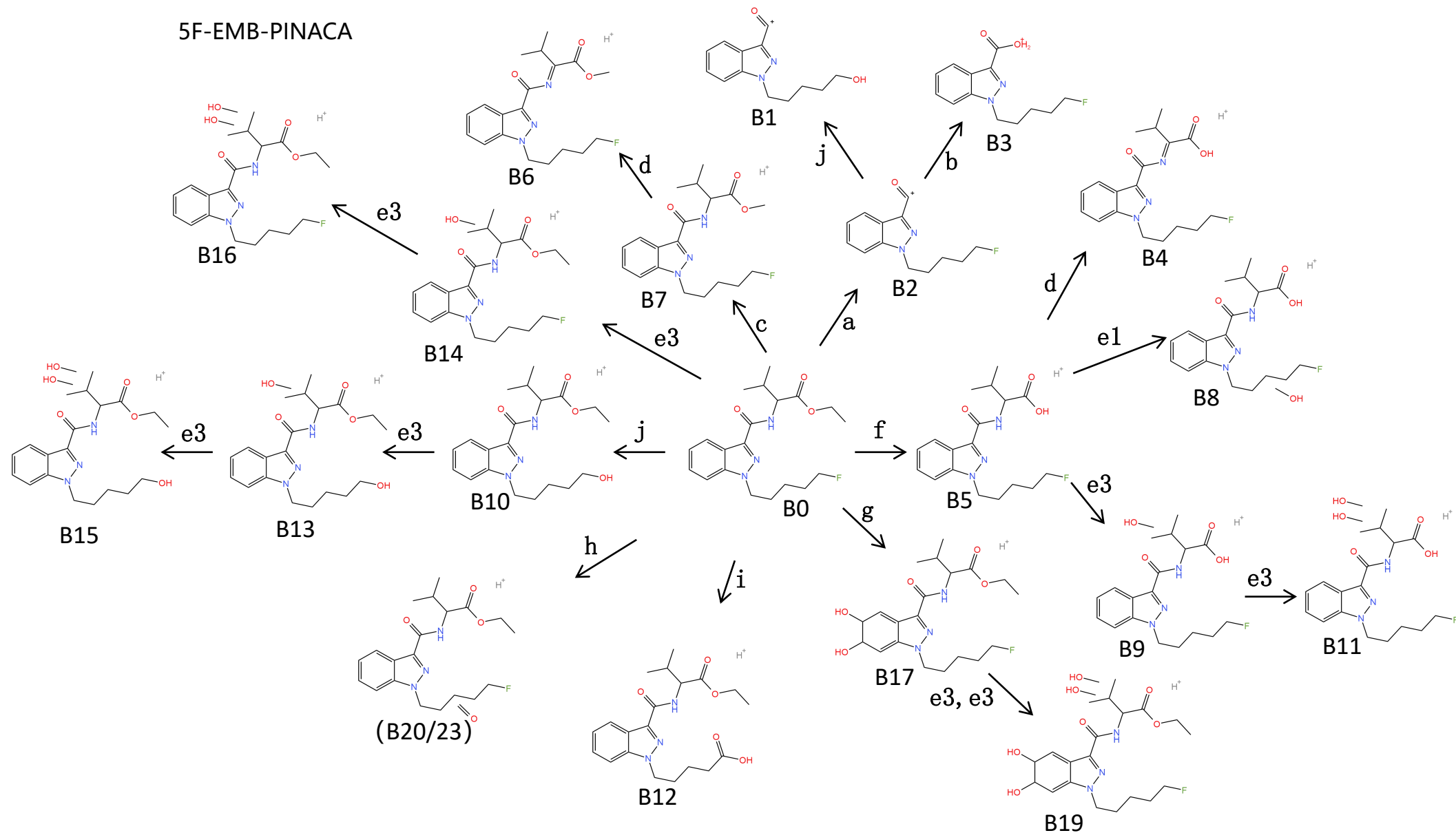


AB-FUBINACA



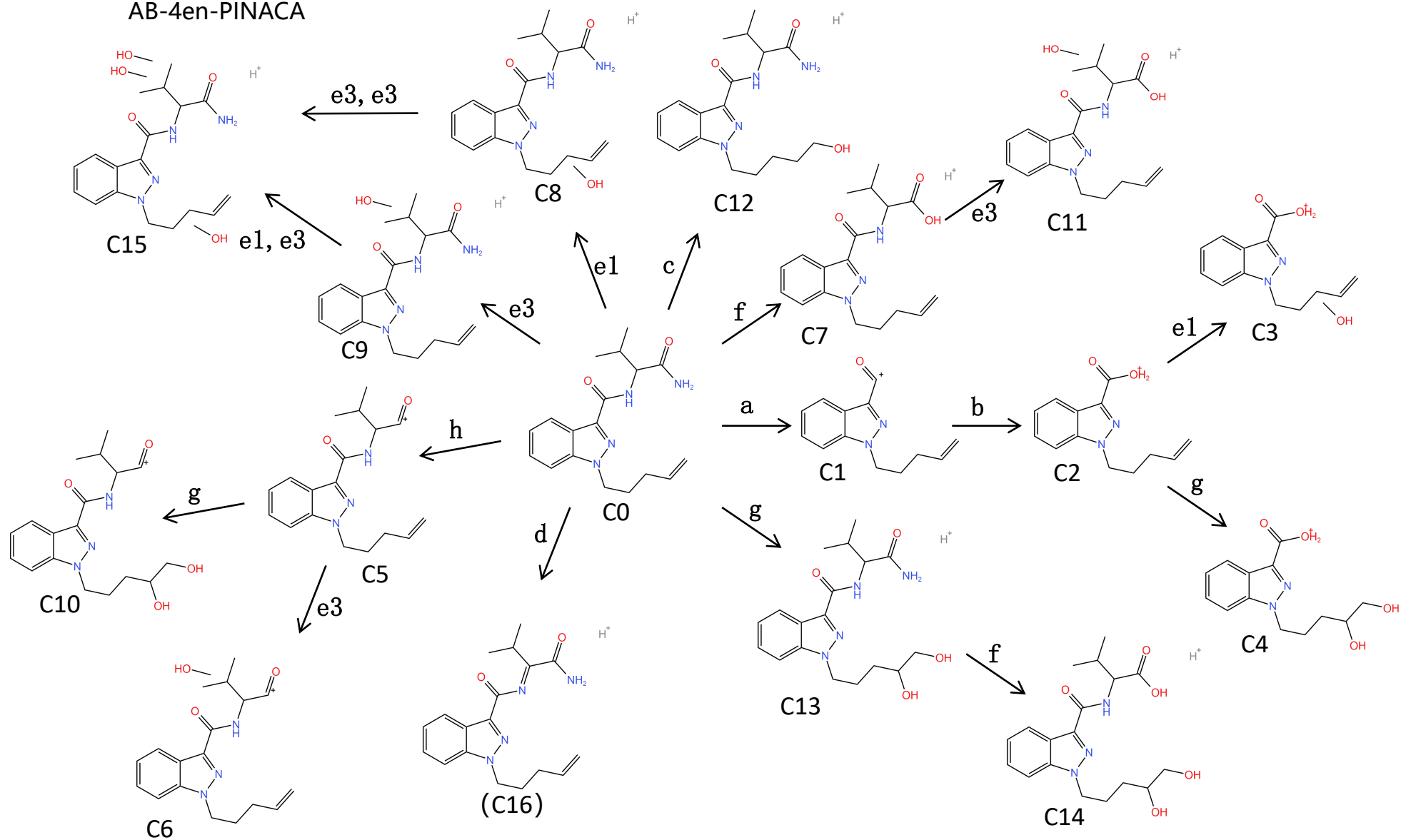
a. deamidation, b. amide hydrolysis, c. dehydrated N-phenyl side chains, d. dehydrogenation, e. hydroxylation (e1. N-Phenyl side chain, e2. indole ring, e3. isopropyl), f. hydrolysis, g. oxidative defluorination, h. Deamination

5F-EMB-PINACA



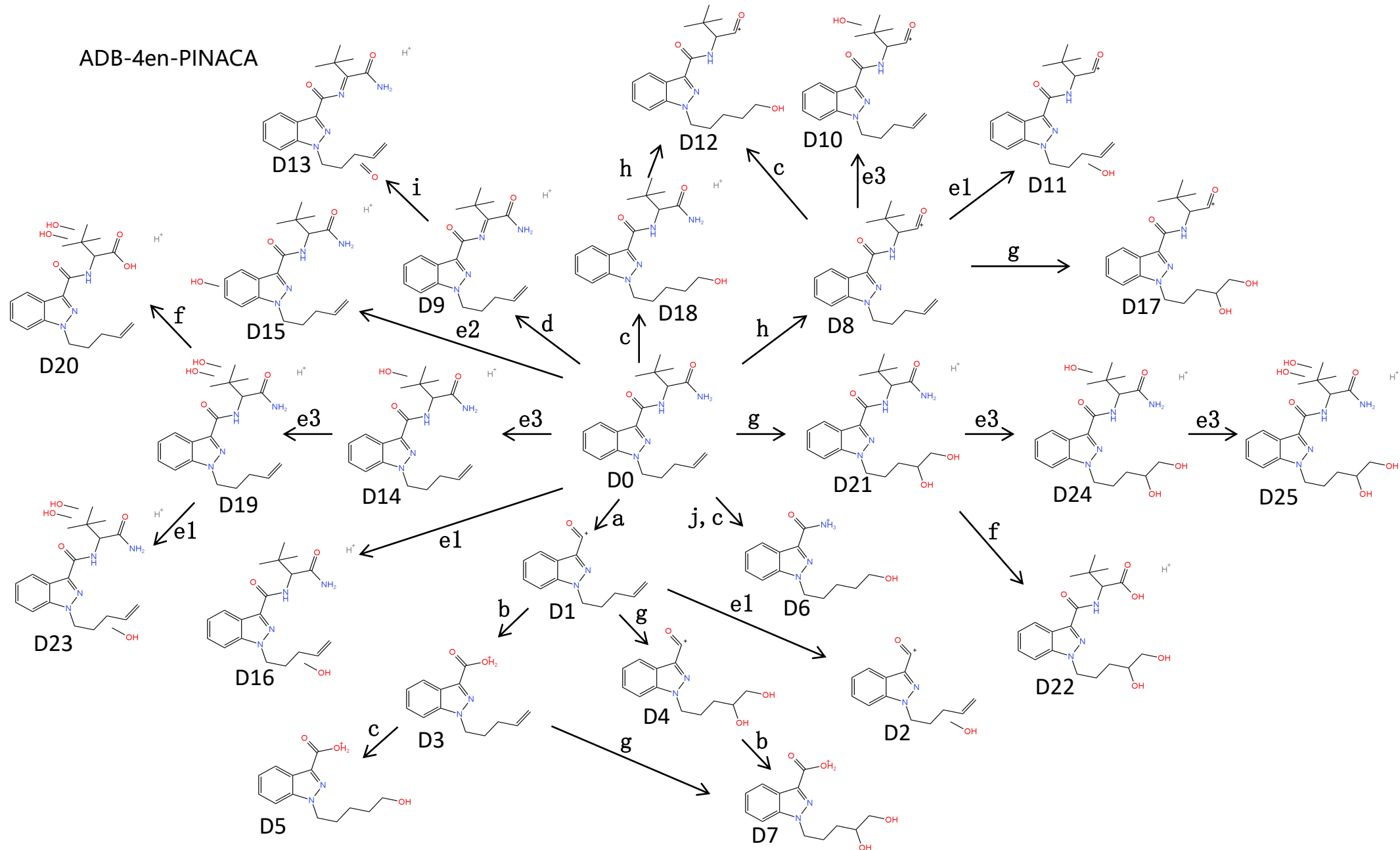
a. deamidation, b. amide hydrolysis, c. demethylation, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. isopropyl) , f. ester hydrolysis, g. dihydrodiol, h. ketone formation, i. acidification, j. oxidative defluorination

AB-4en-PINACA



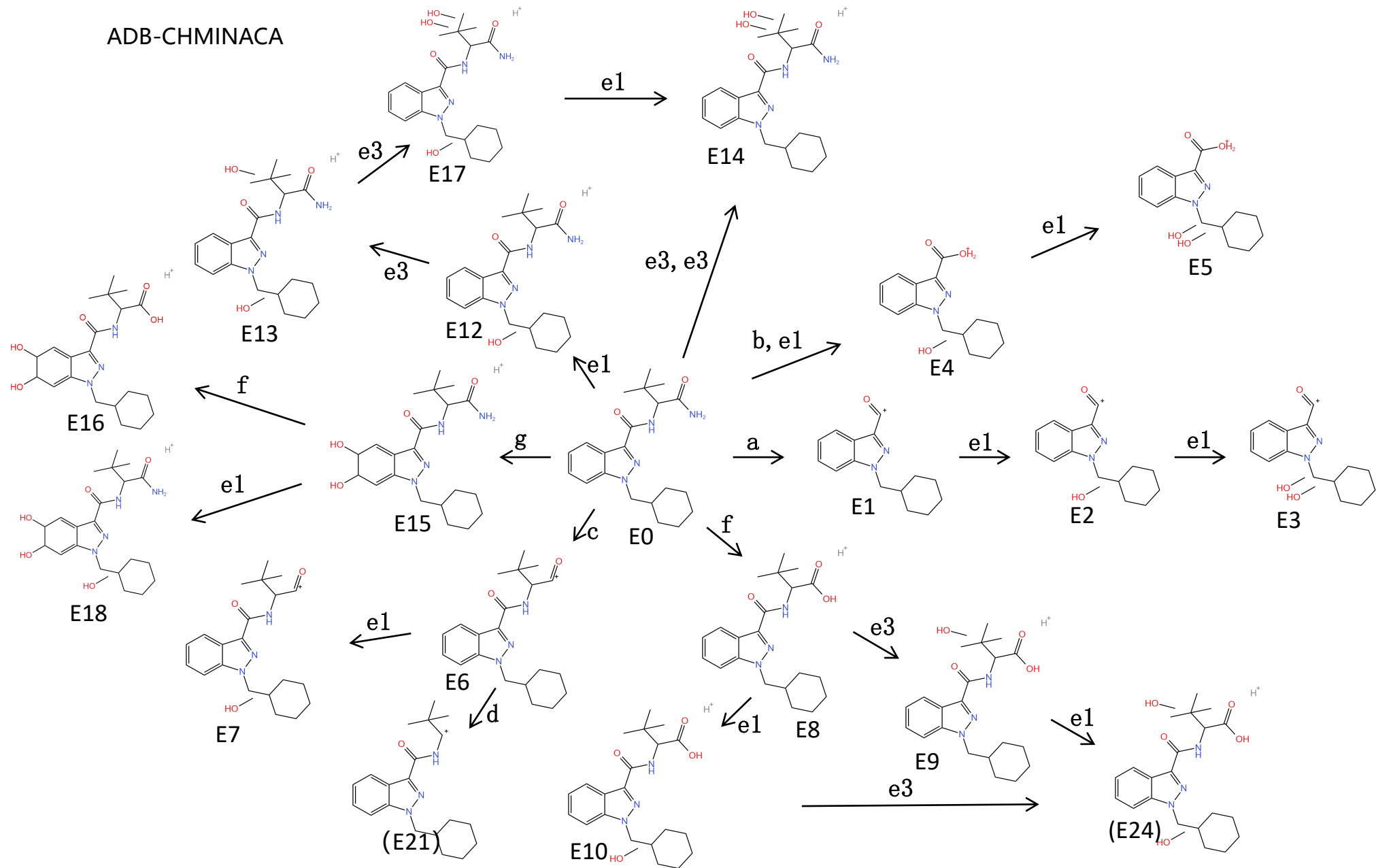
a. deamidation, b. amide hydrolysis, c. hydration, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. isopropyl) , f. hydrolysis, g. dihydrodiol, h. deester group removal

ADB-4en-PINACA



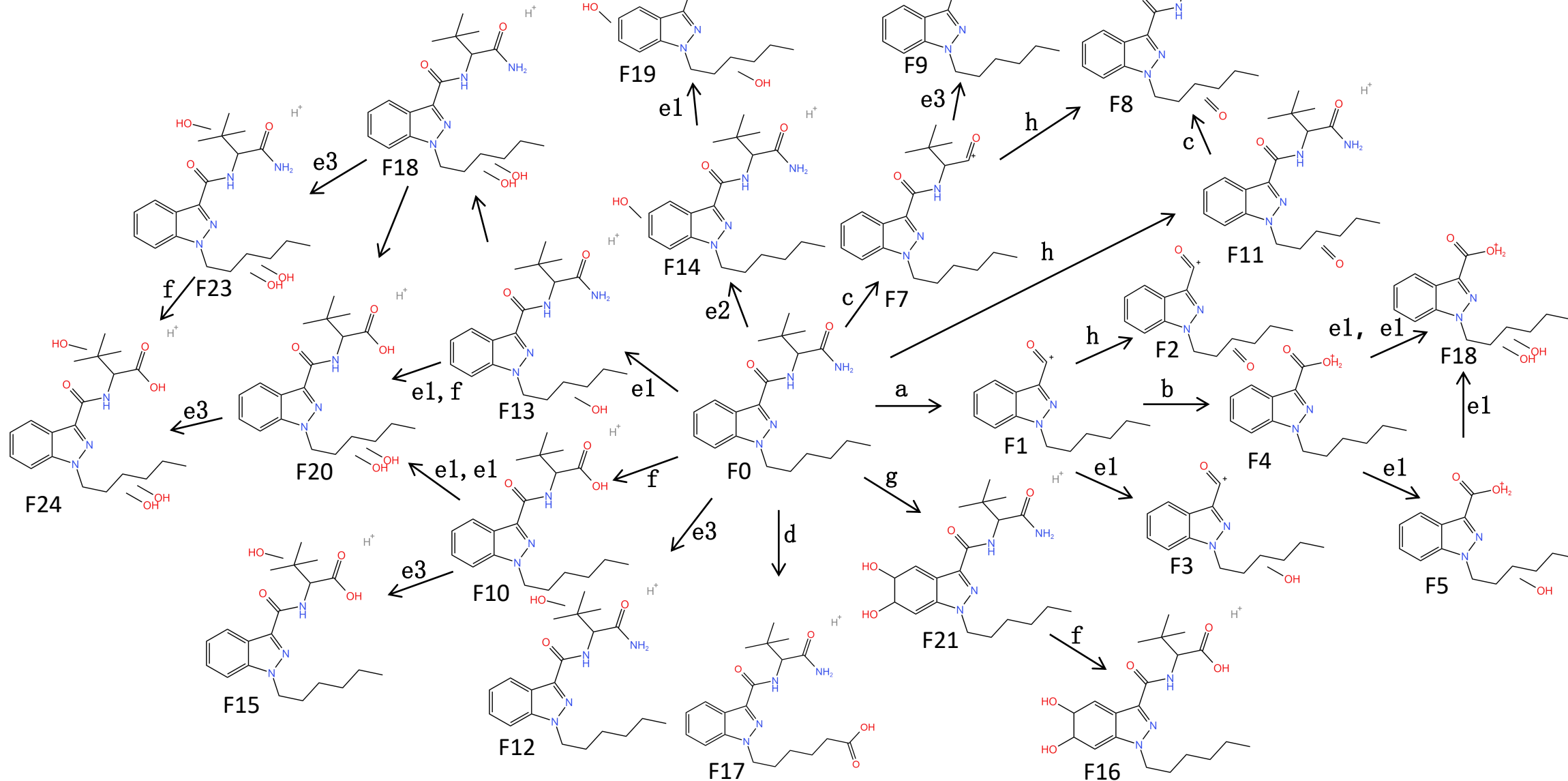
a. deamidation, b. amide hydrolysis, c. hydration, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. tert-butyl) , f. hydrolysis, g. dihydrodiol, h. deester group removal, i. ketone formation, j. deamidation (C-N bond at amide junction is broken)

ADB-CHMINACA

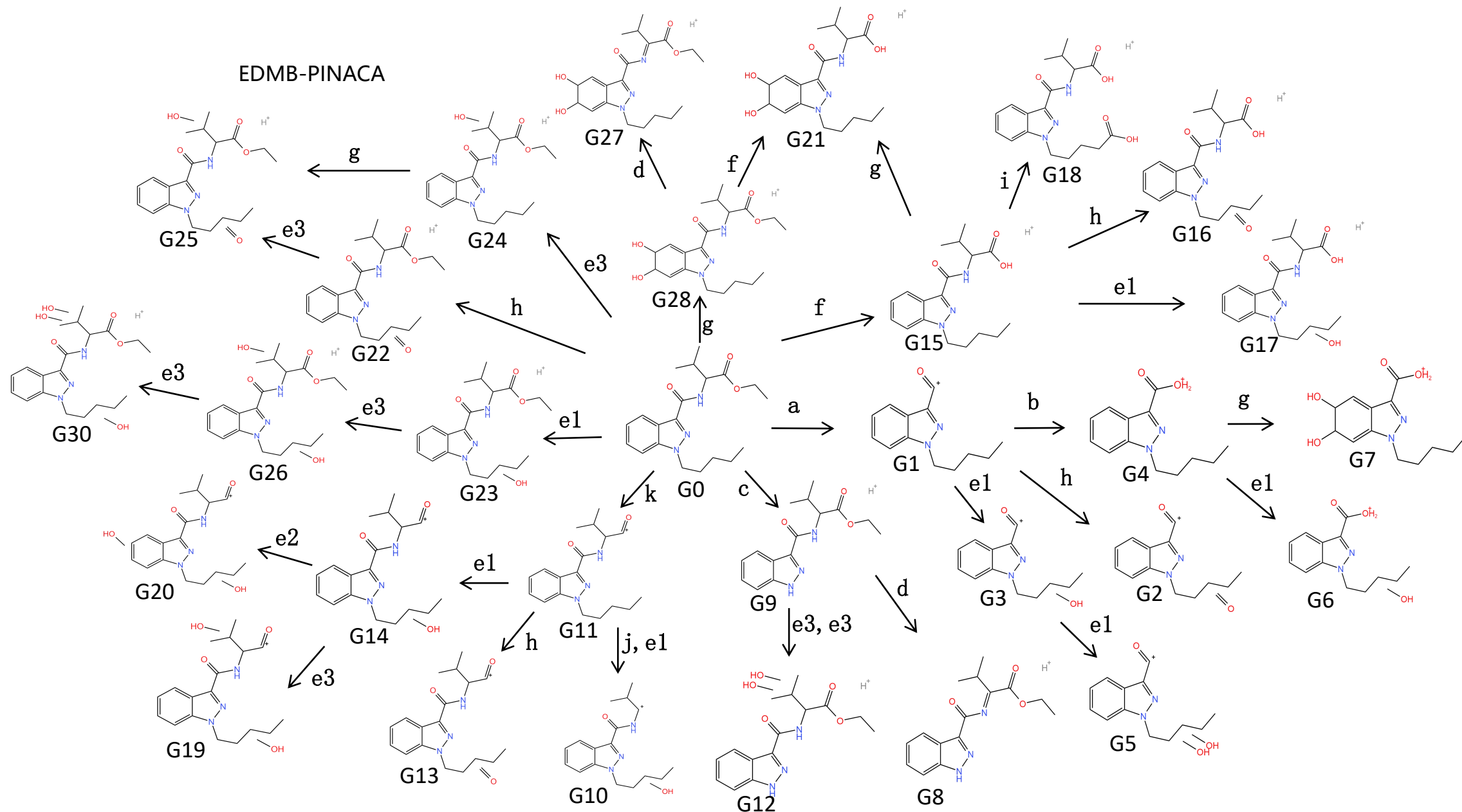


a. deamidation, b. amide hydrolysis, c. deester group removal, d. decarbonyl, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. isopropyl), f. hydrolysis, g. dihydrodiol

ADB-HEXINACA

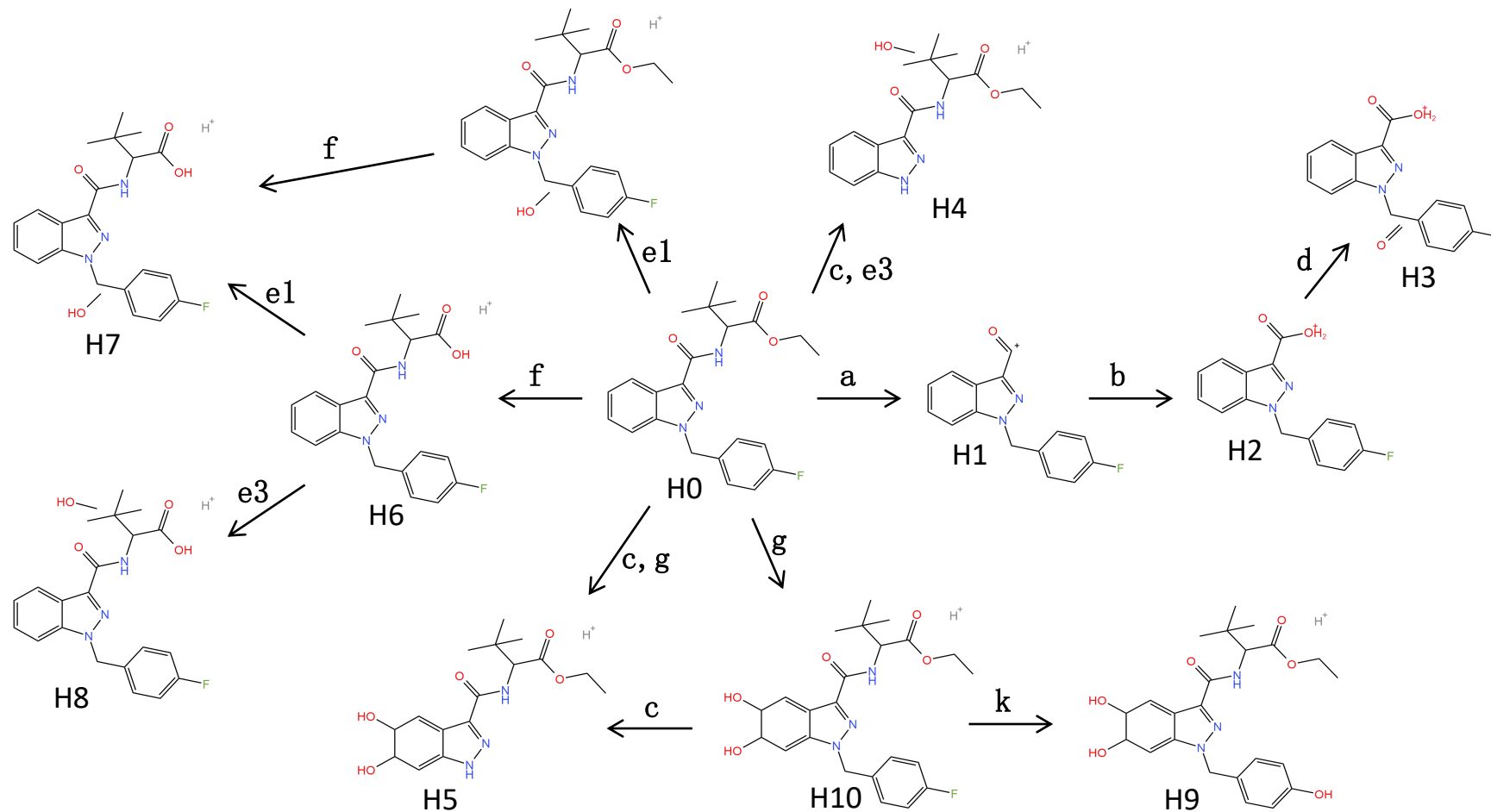


a. deamidation, b. amide hydrolysis, c. deester group removal, d. acidification, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. tert-butyl) , f. ester hydrolysis, g. dihydrodiol, h. ketone formation



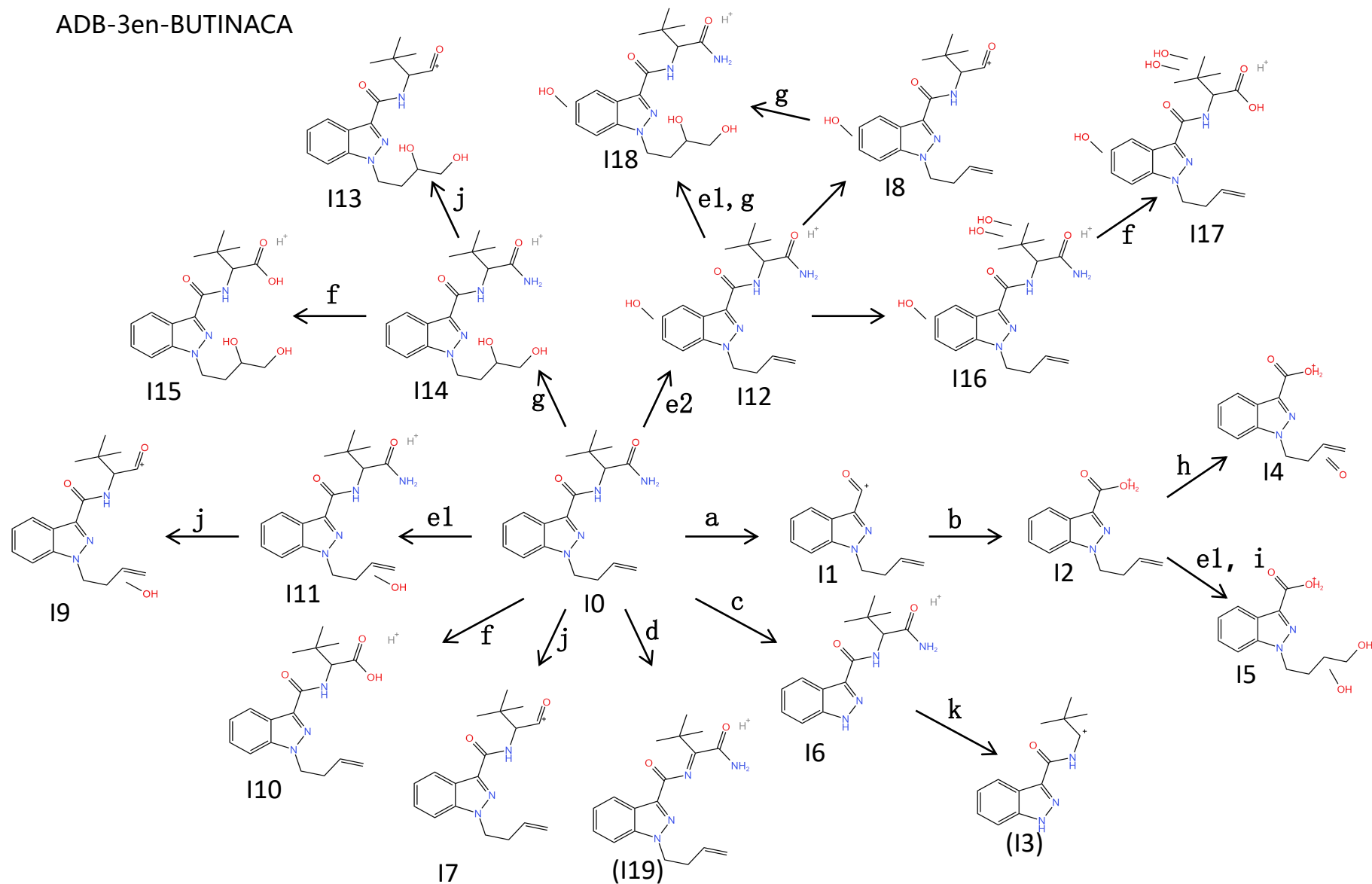
a. deamidation, b. amide hydrolysis, c. N-alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. isopropyl), f. ester hydrolysis, g. dihydrodiol, h. ketone formation, i. acidification, j. decarbonyl, k. deester group removal

EMB-FUBINACA



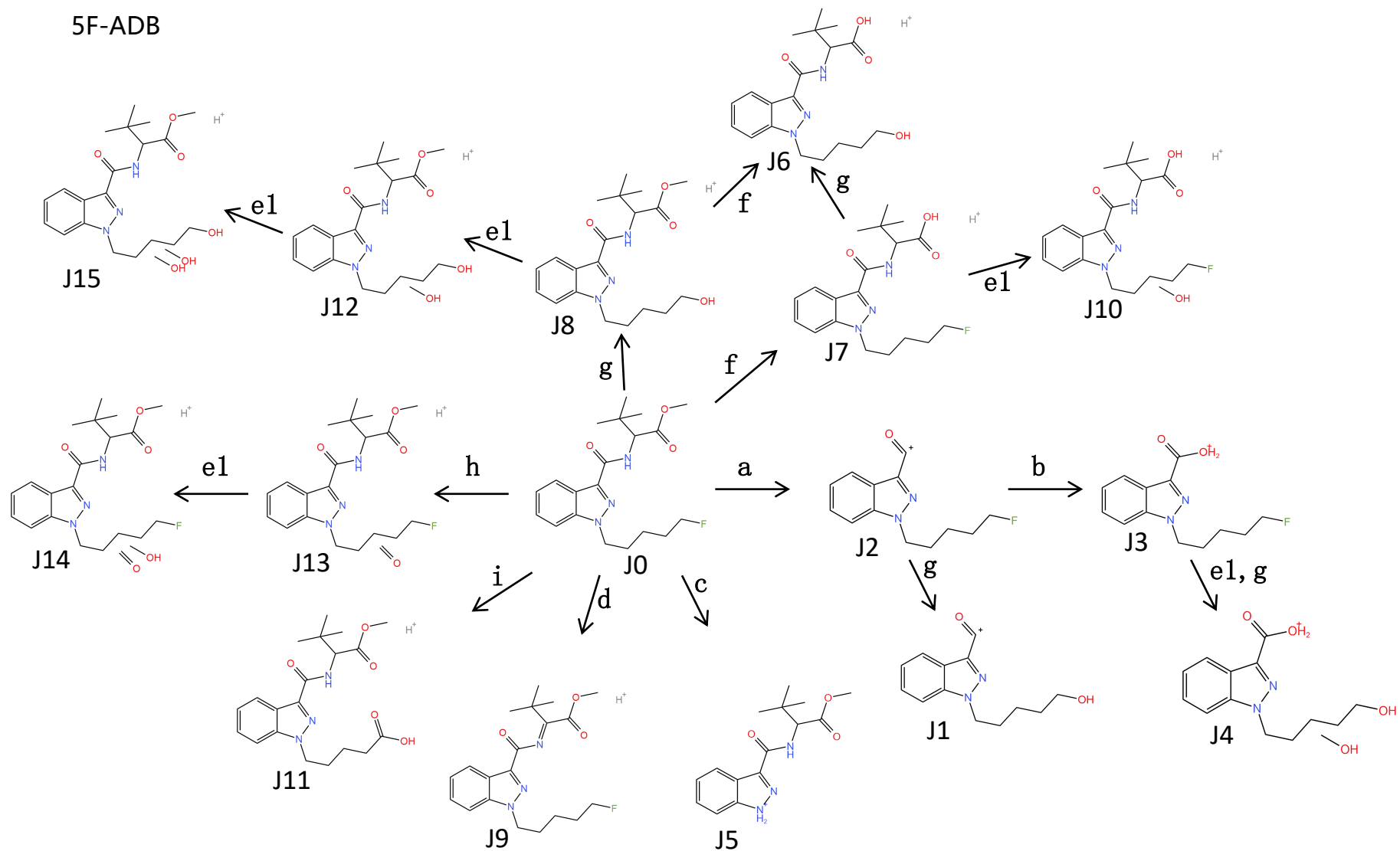
a. deamidation, b. amide hydrolysis, c. N- alkyl side chain removal, d. ketone formation, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. tert-butyl) , f. ester hydrolysis , g. dihydrodiol, k. oxidative defluorination

ADB-3en-BUTINACA



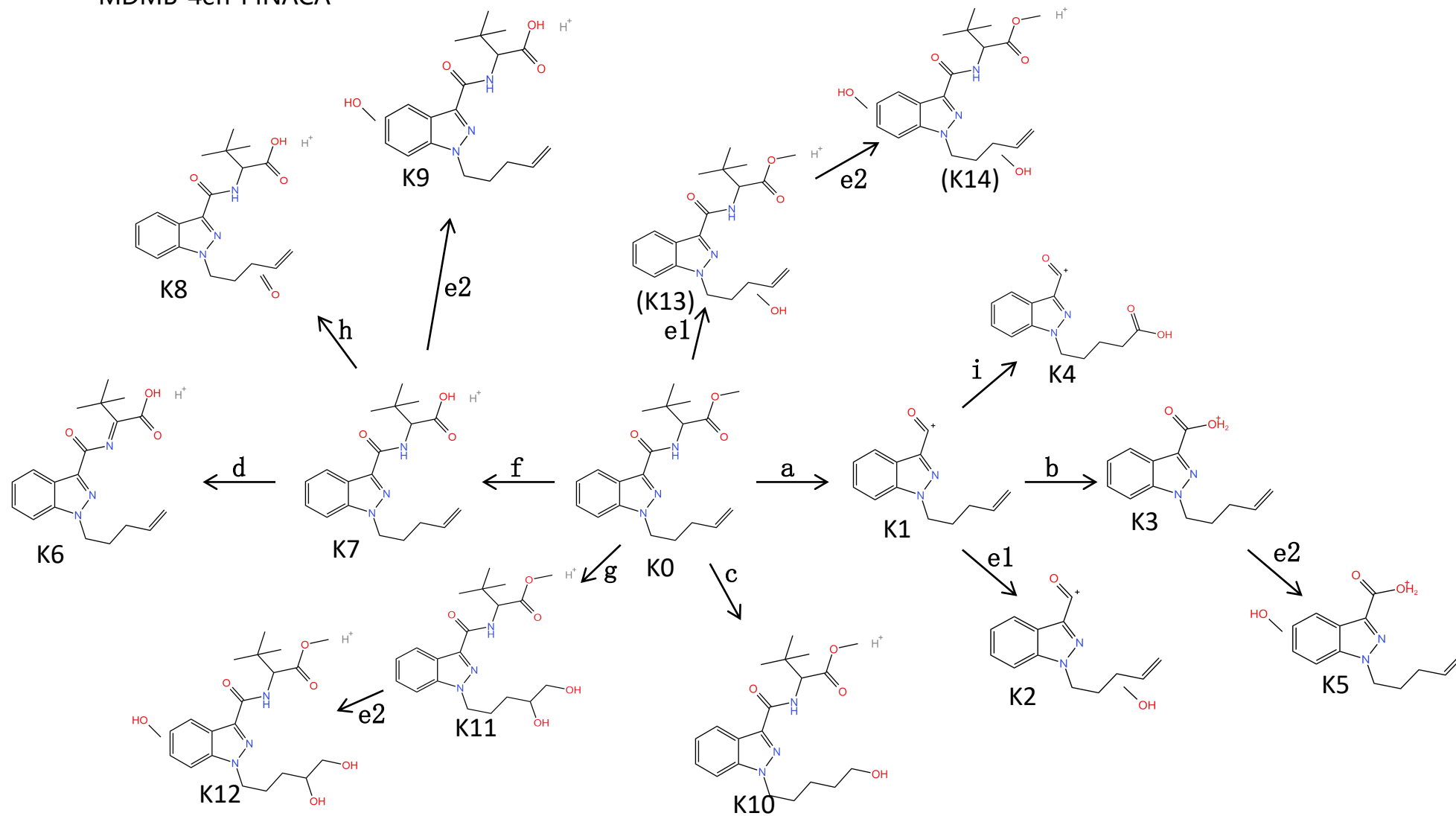
a. deamidation, b. amide hydrolysis, c. N-alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. tert-butyl), f. hydrolysis, g. dihydrodiol, h. ketone formation, i. hydration, j. Deamination, k. decarbonyl

5F-ADB



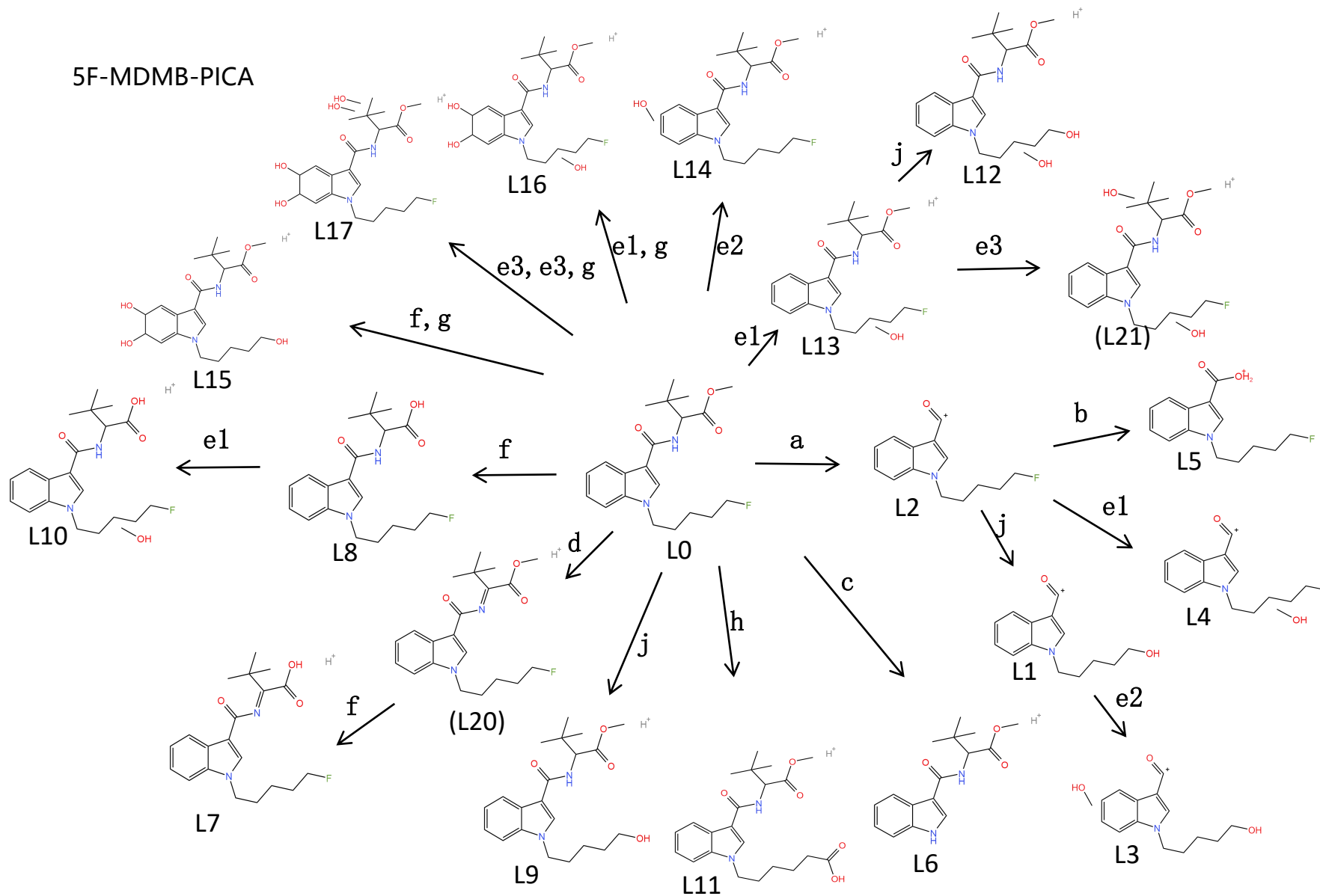
a. deamidation, b. amide hydrolysis, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. tert-butyl) , f. ester hydrolysis, g.oxidative defluoridation, h.ketone formation, i.acidification

MDMB-4en-PINACA



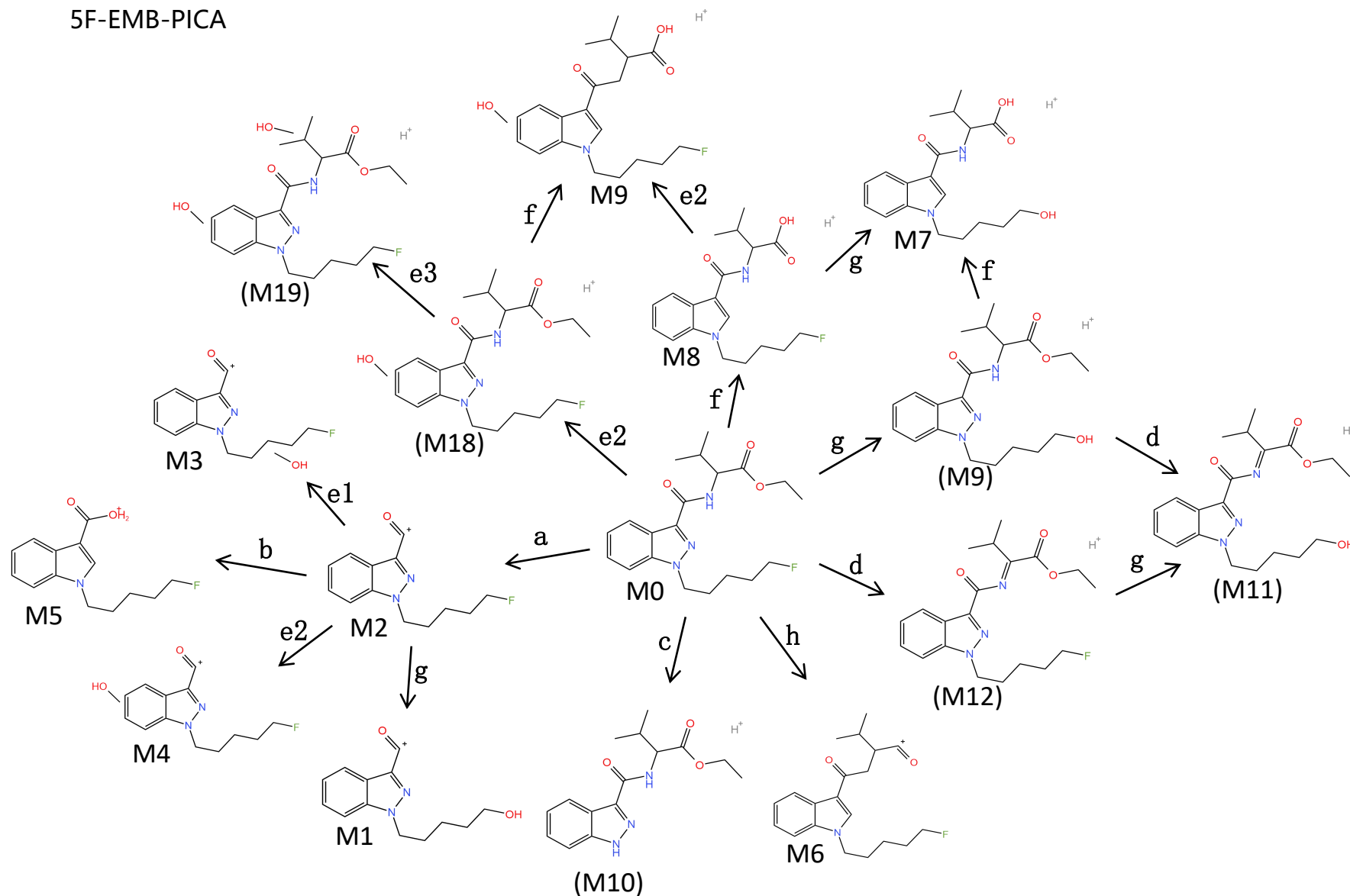
a. deamidation, b. amide hydrolysis, c. hydration, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. Indazole ring, e3. tert-butyl) , f. ester hydrolysis, g. dihydrodiol, h. ketone formation, i. acidification

5F-MDMB-PICA



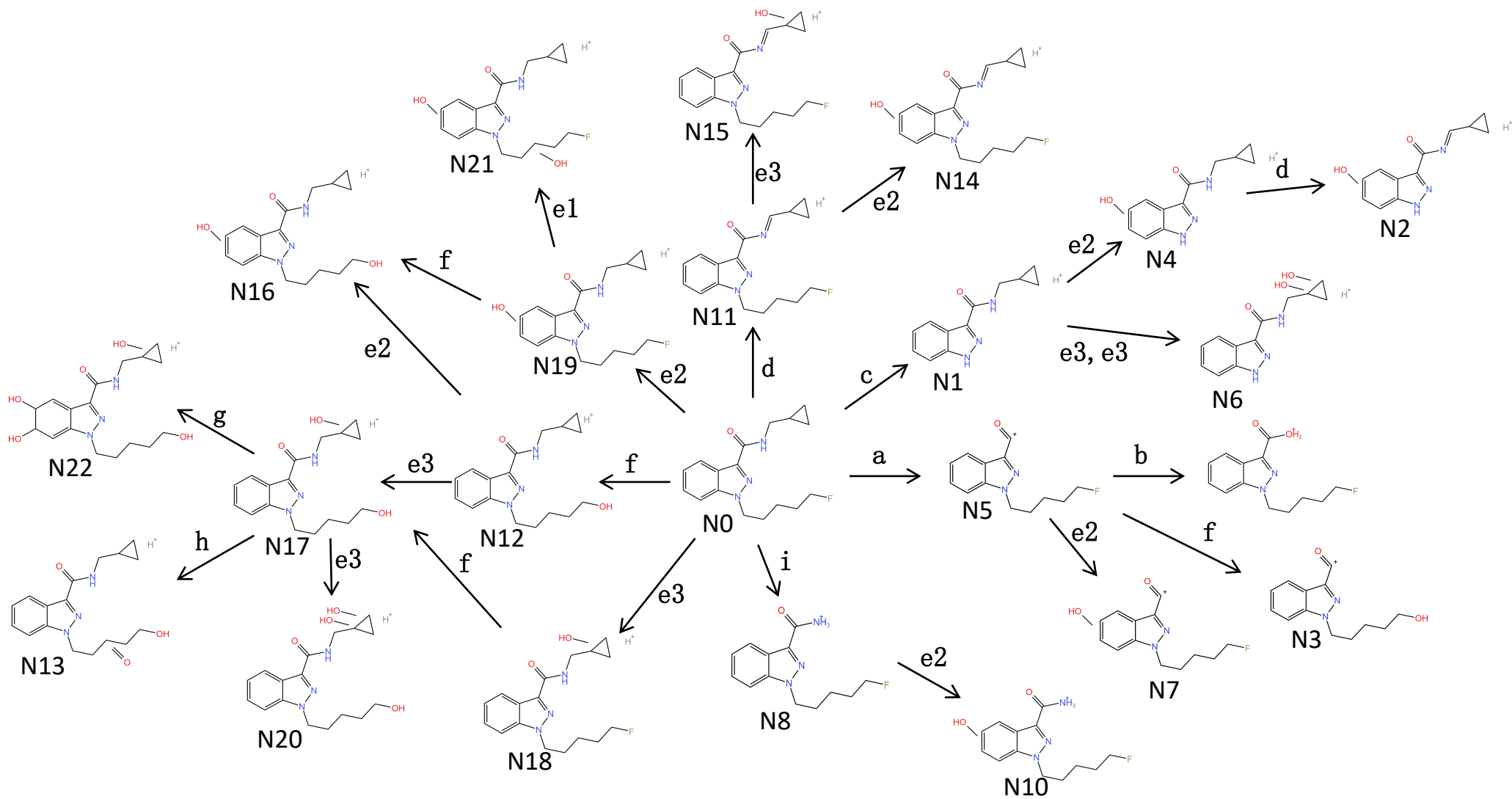
a. deamidation, b. amide hydrolysis, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. tert-butyl) , f. ester hydrolysis, g.dihydrodiol, h.acidification, j.oxidative defluorination

5F-EMB-PICA



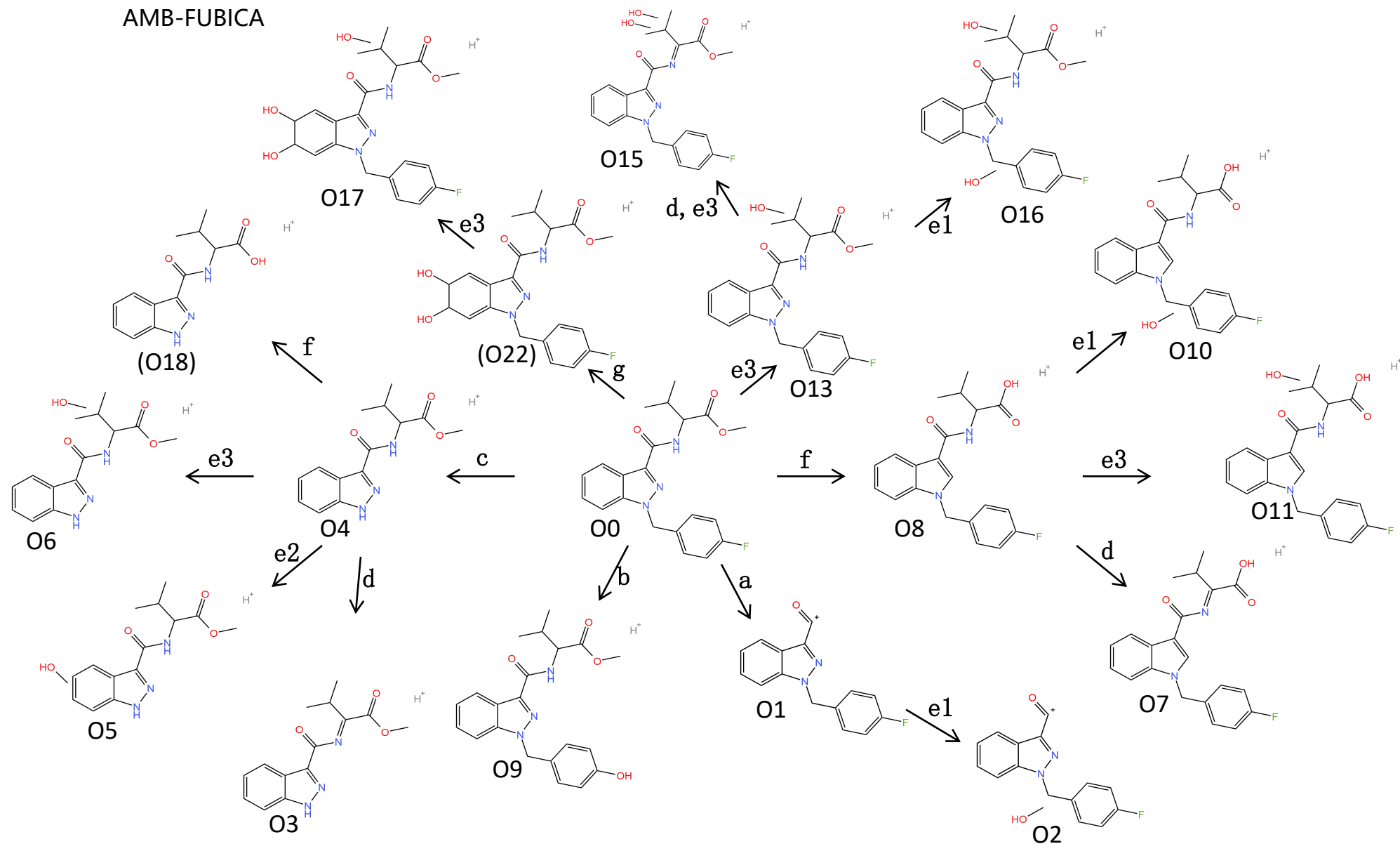
a. deamidation, b. amide hydrolysis, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. isopropyl) , f. ester hydrolysis, g.oxidative defluoridation, h.deester group removal

5F-CYPPICA



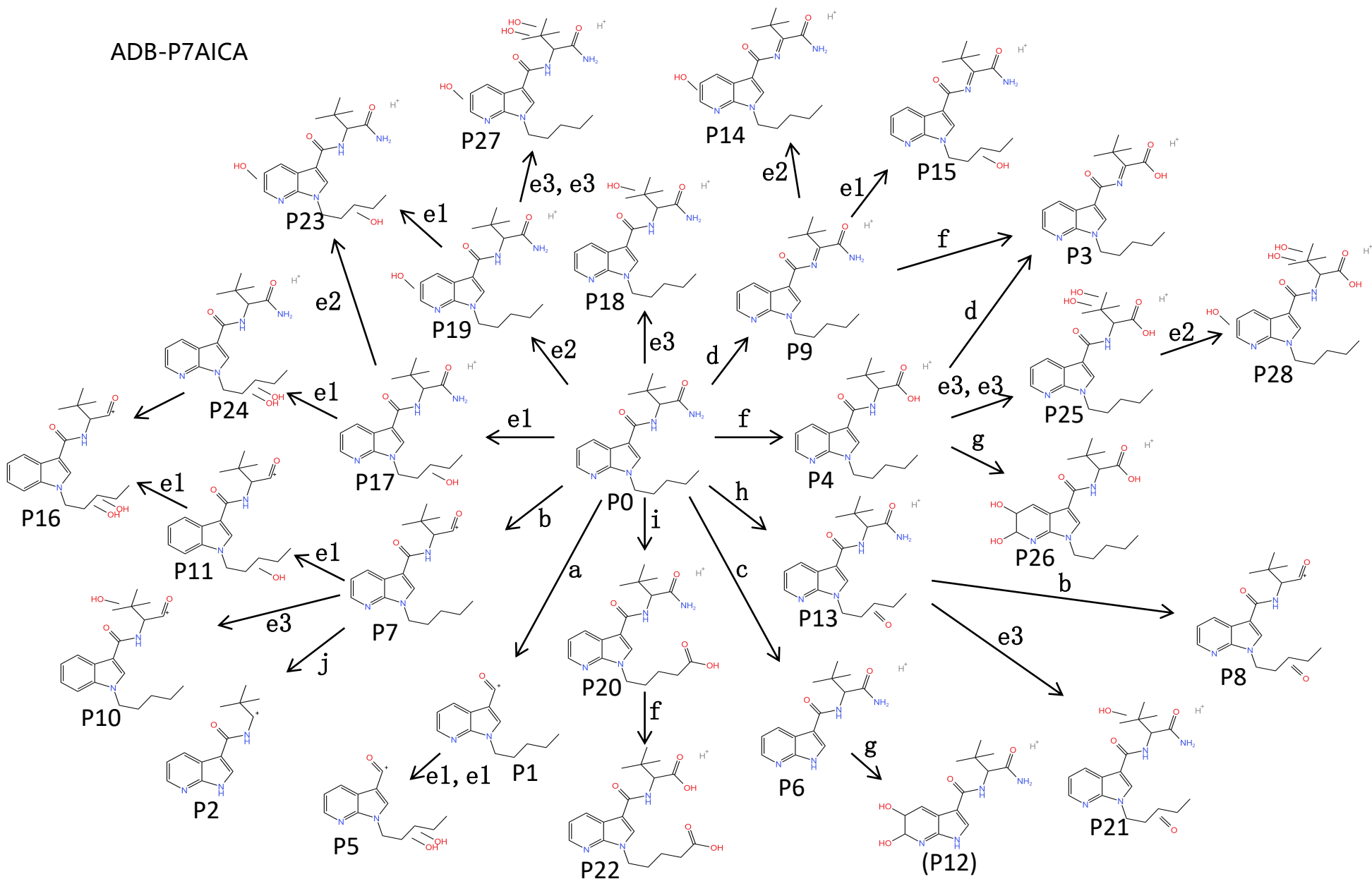
a. deamidation, b. amide hydrolysis, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. tert-butyl) , f. oxidative defluorination, g.dihydrodiol, h.ketone formation, i.decyclobutane

AMB-FUBICA



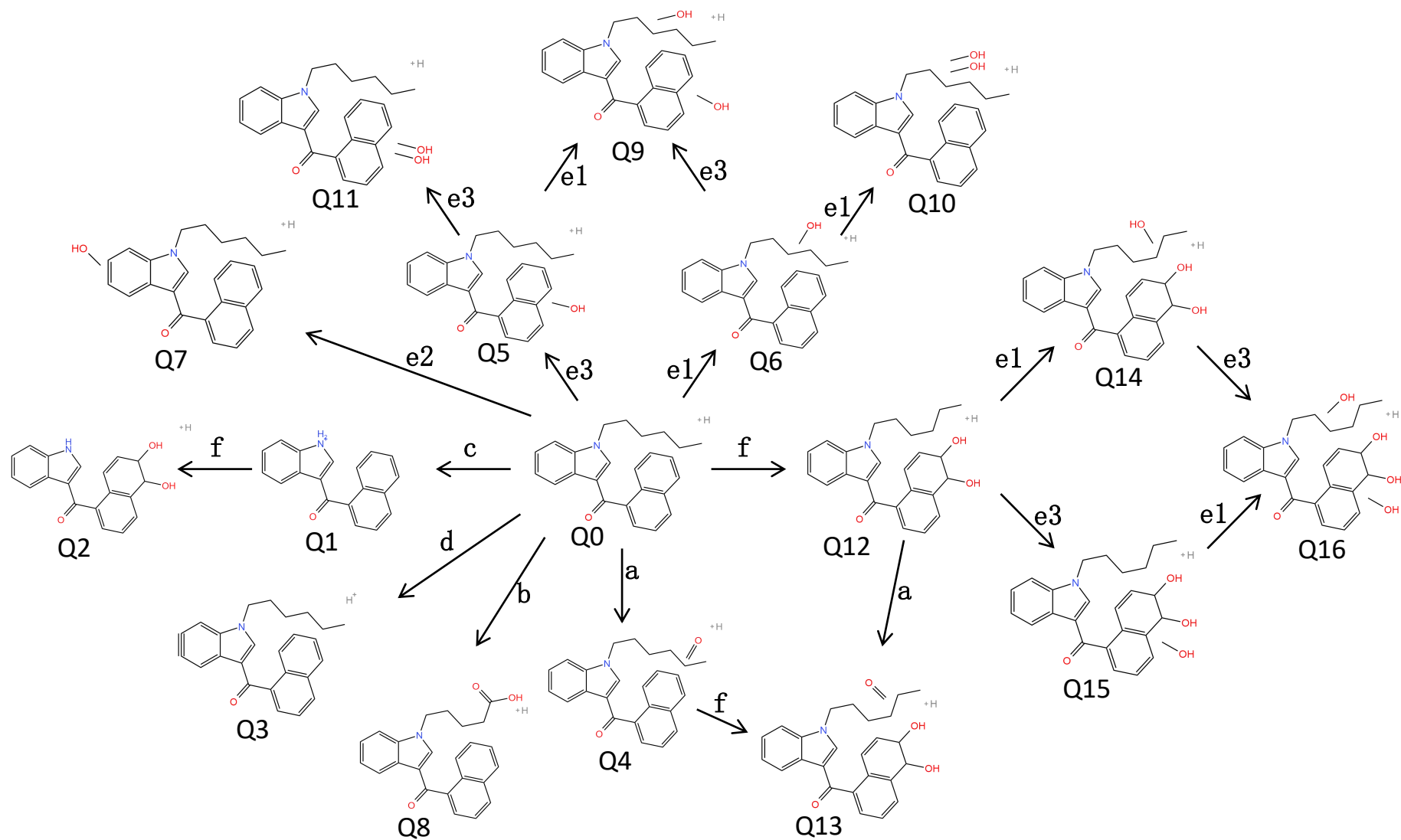
a. deamidation, b. oxidative defluoridation, c. dehydrated N-phenyl side chains, d. dehydrogenation, e. hydroxylation (e1. N-Phenyl side chain, e2. indole ring, e3. isopropyl) , f. ester hydrolysis, g. dihydrodiol

ADB-P7AICA

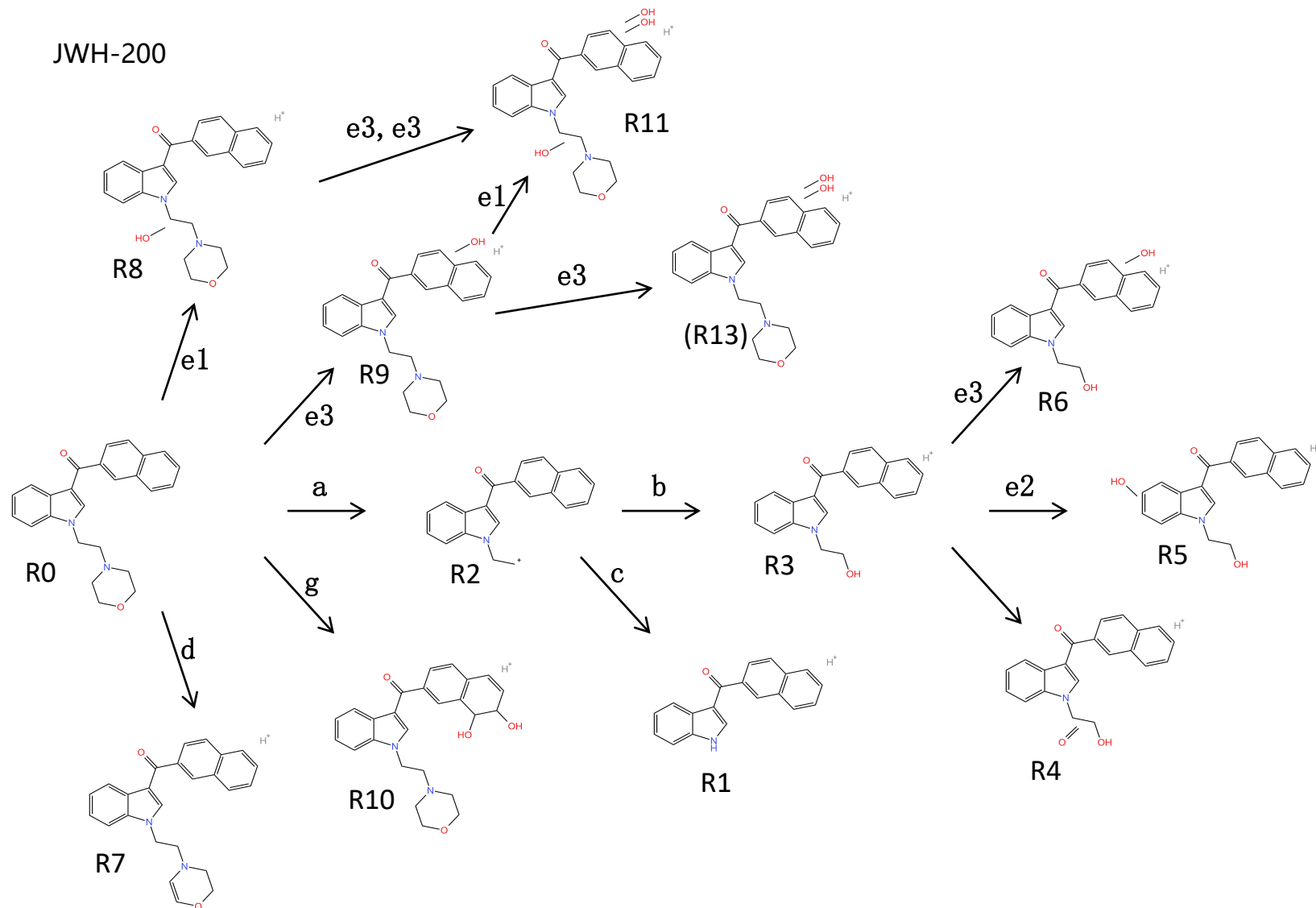


a. deamidation, b. Deamination, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. tert-butyl) , f. hydrolysis, g.dihydrodiol, h.ketone formation, i.acidification, j.decarbonyl

JWH-019

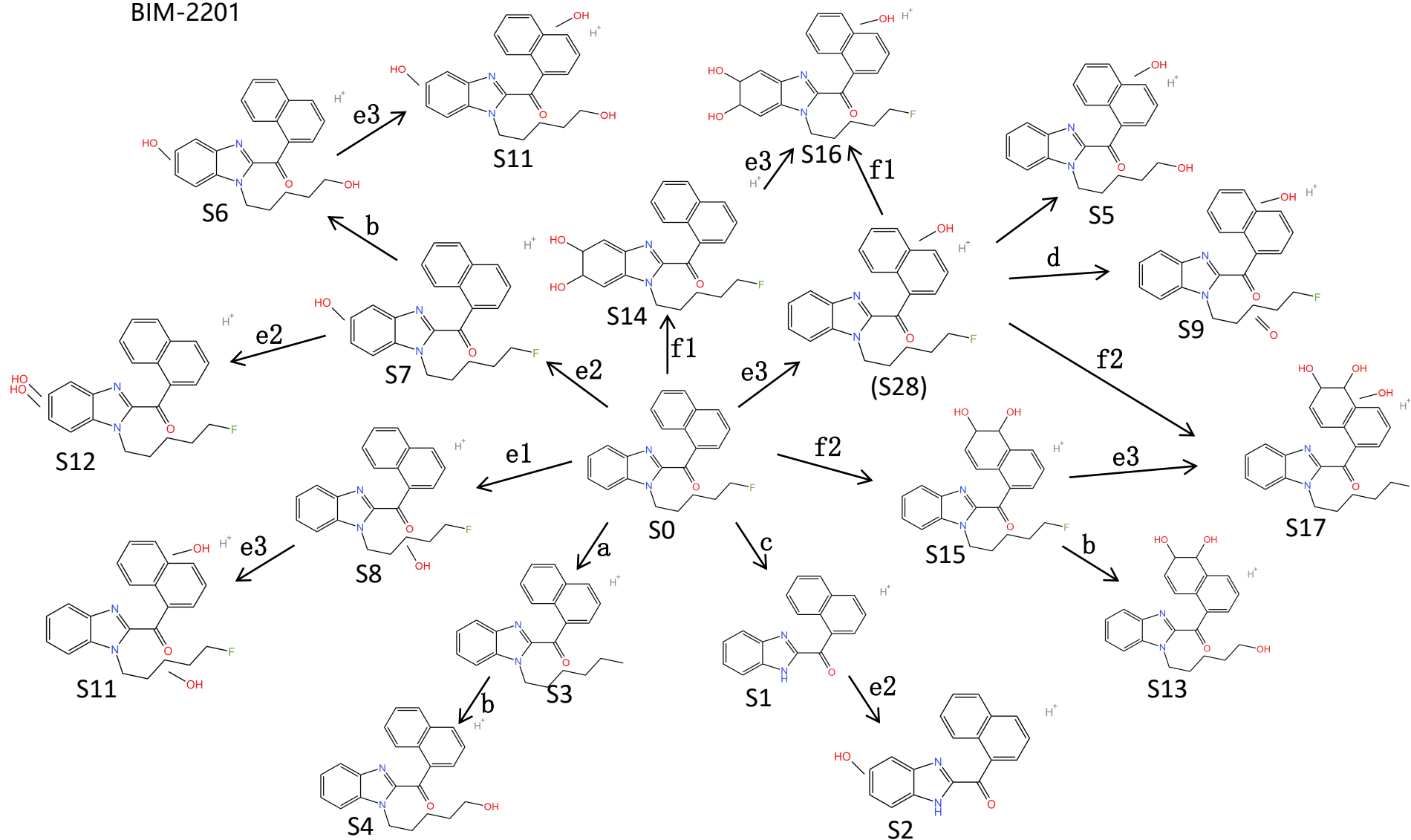


a. ketone formation, b. acidification, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. naphthyl) , f. dihydrodiol



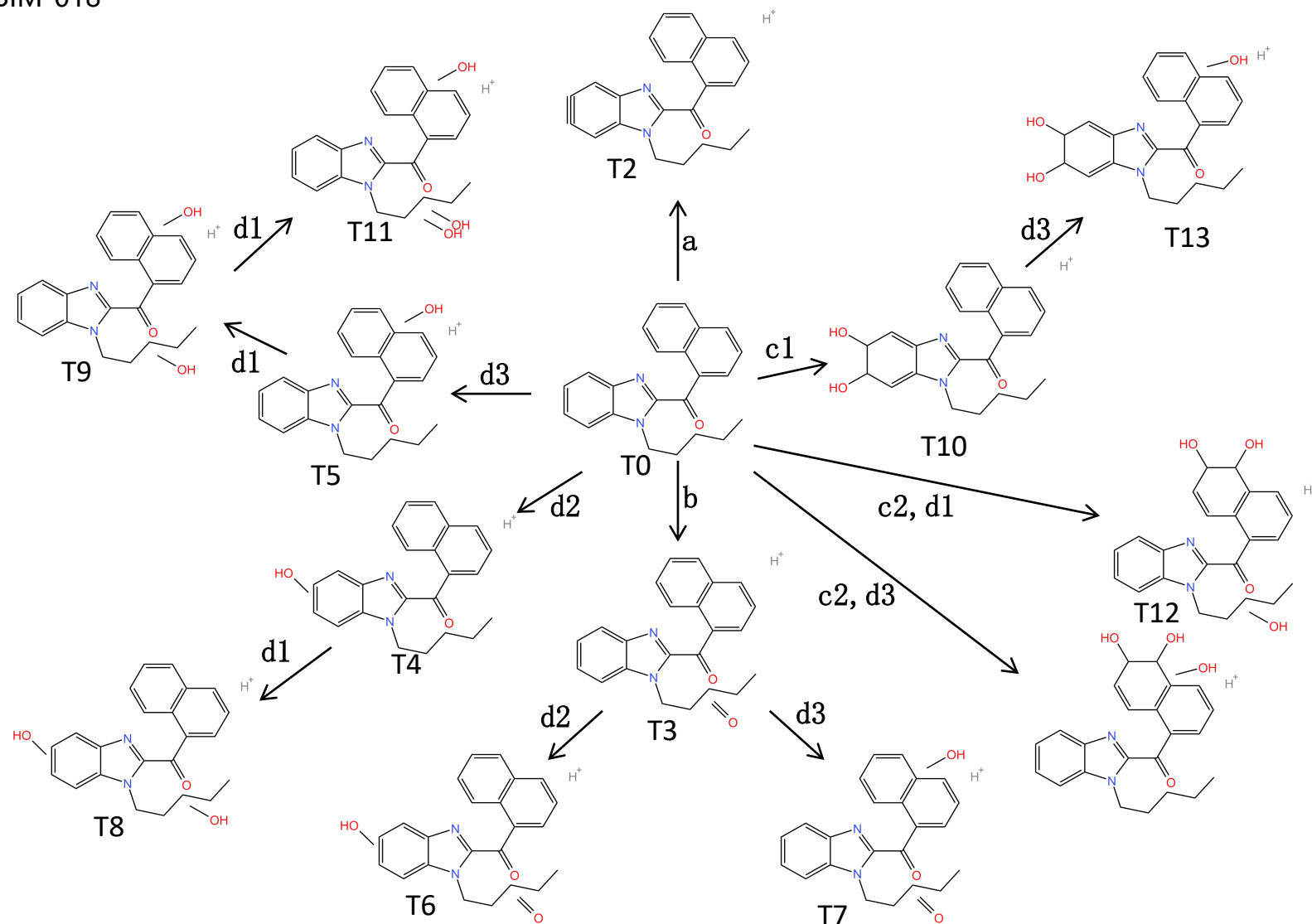
a. diethylmorpholine, b. oxidation, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. naphthyl) , f. dihydrodiol, g.ketone formation

BIM-2201



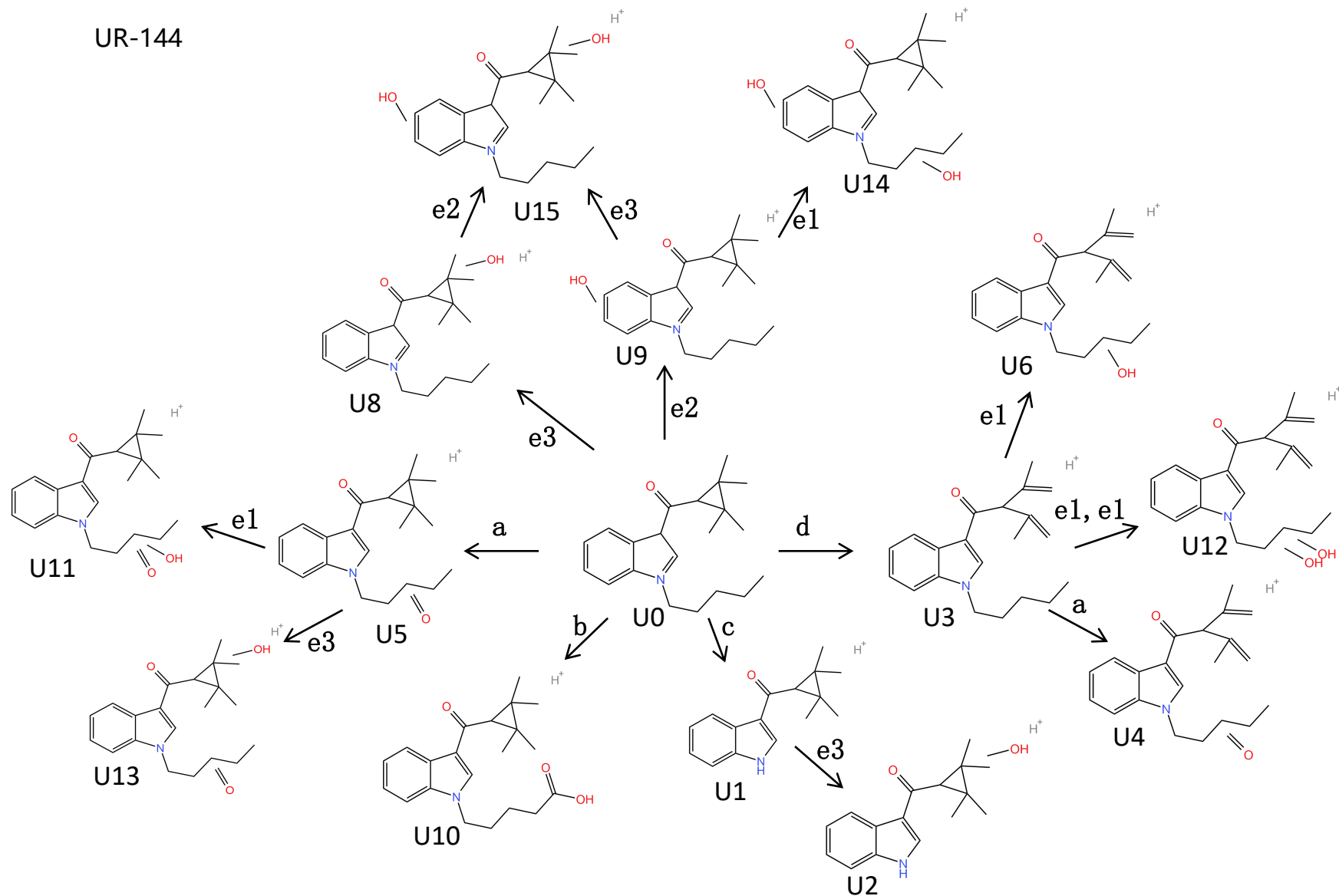
a. defluorination, b. oxidative defluorination, c. N- alkyl side chain removal, d. ketone formation, e. hydroxylation (e1. N-alkyl side chains, e2. benzimidazole ring, e3. naphthyl) , f. dihydrodiol (f1. benzimidazole ring, f2. naphthyl)

BIM-018



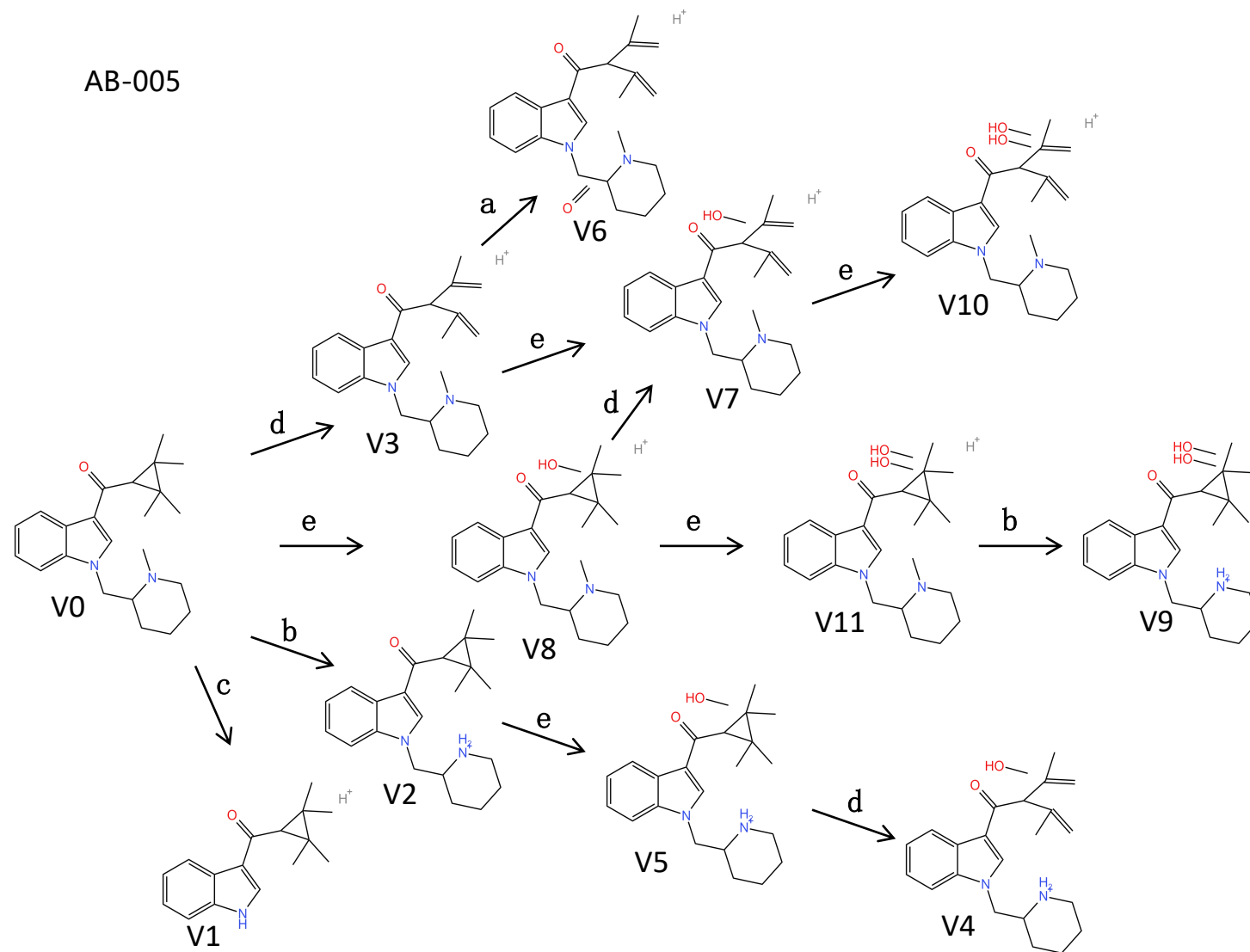
a. dehydrogenation, b. ketone formation, c. dihydrodiol (c1.benzimidazole ring, c2.naphthyl) , d. hydroxylation (d1. N-alkyl side chains, d2. benzimidazole ring, d3. naphthyl)

UR-144



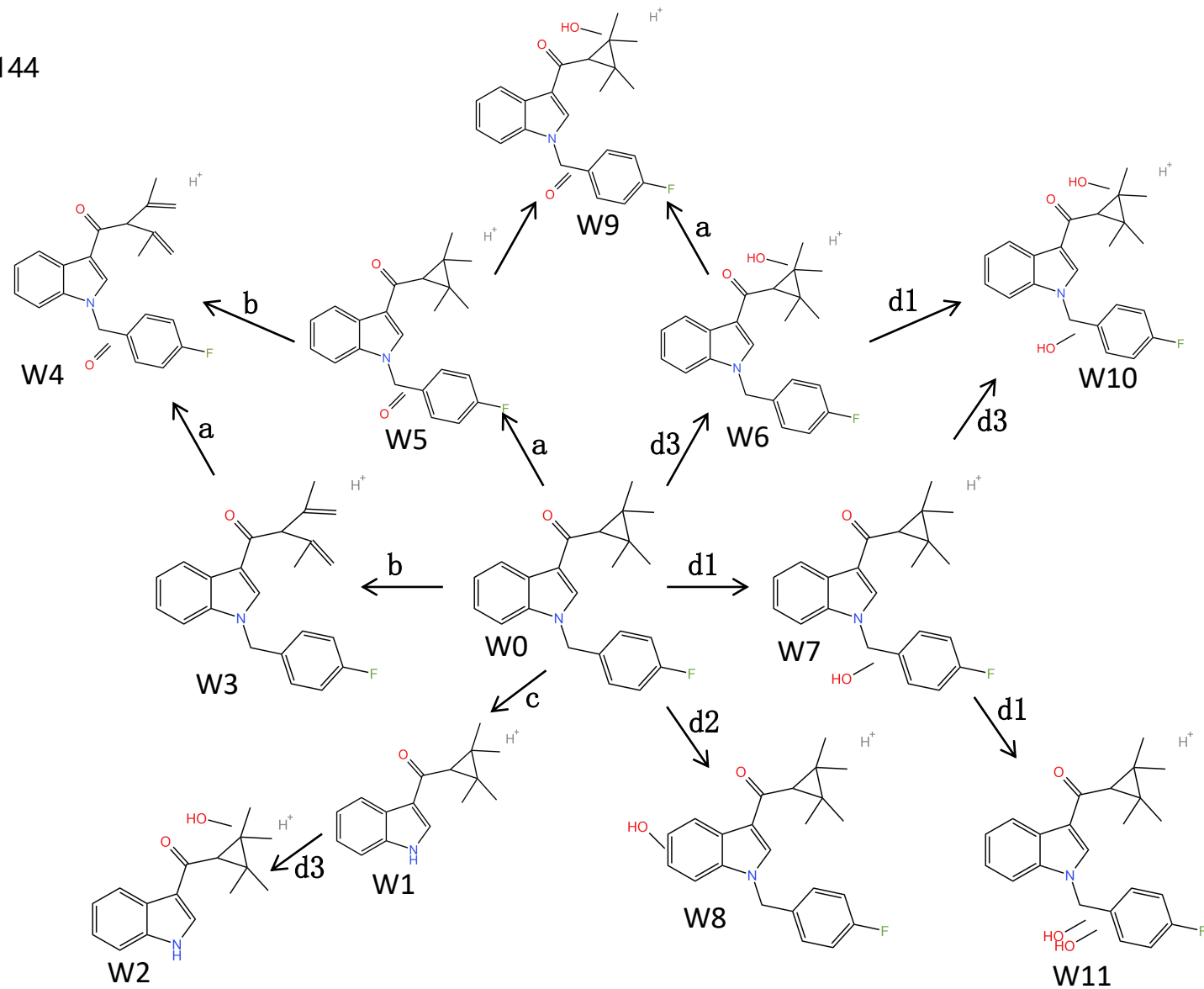
a. ketone formation, b. acidification, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2. indole ring, e3. cyclopropyl)

AB-005



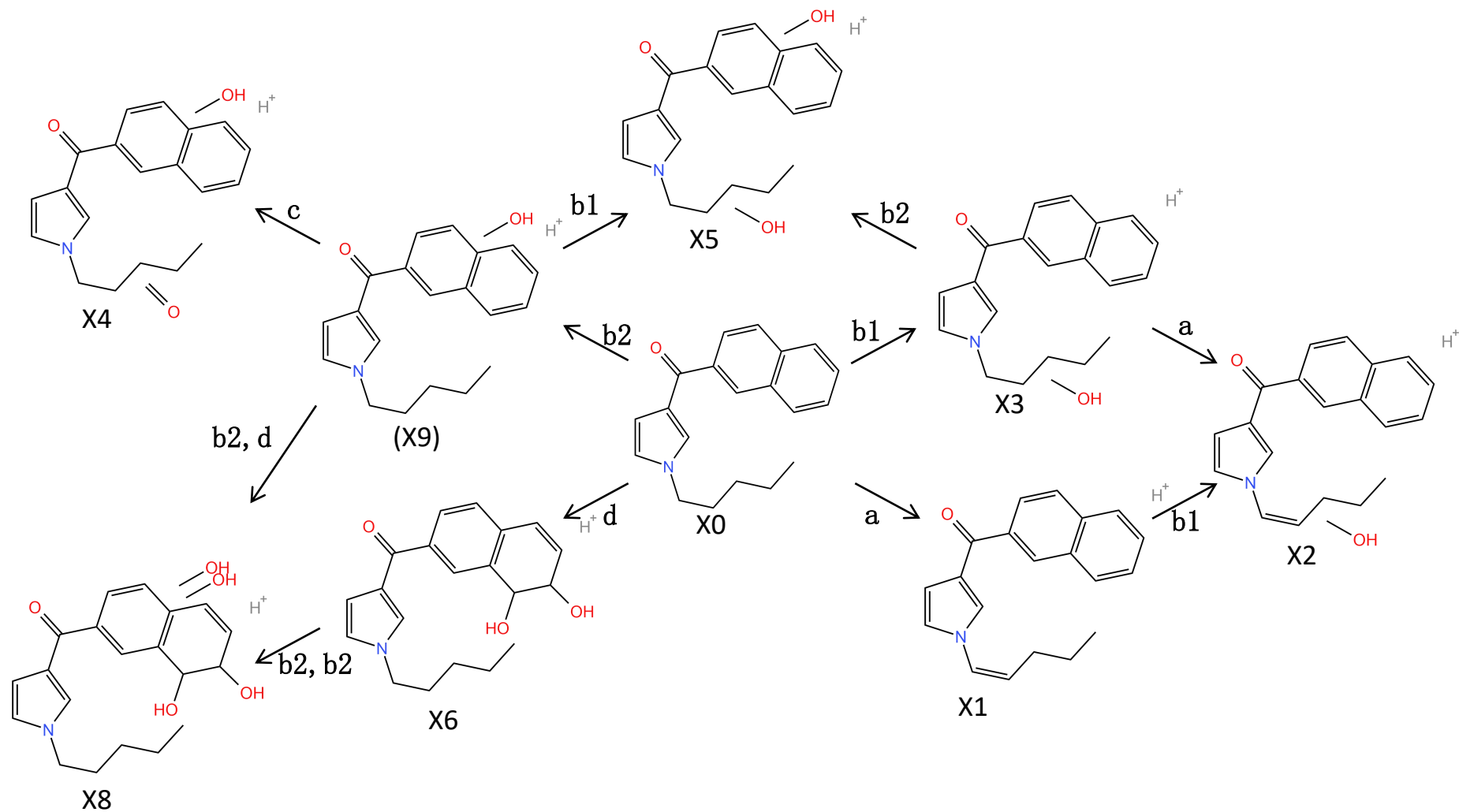
a. ketone formation, b. demethylation, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (cyclopropyl)

FUB-144

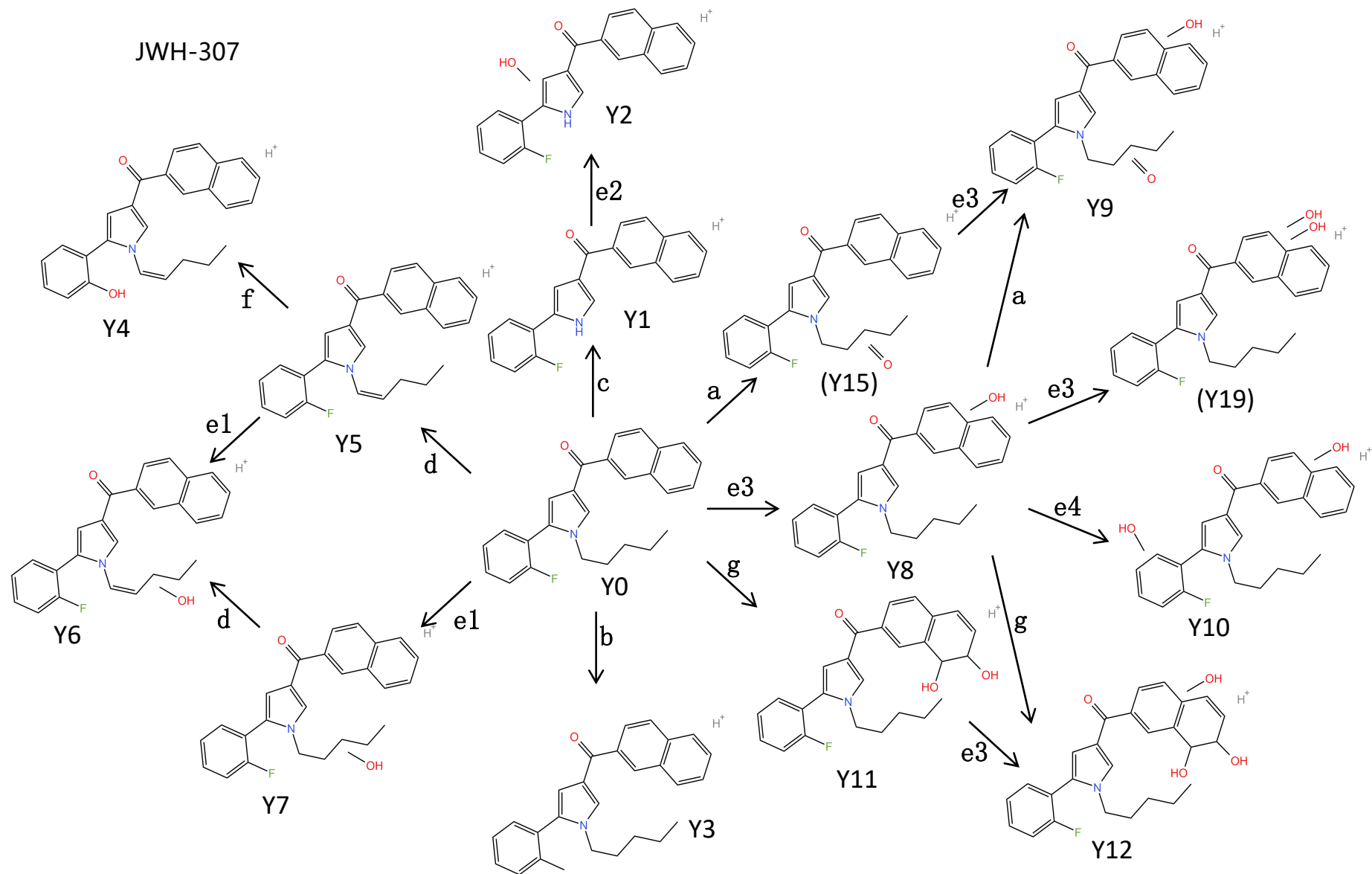


a. ketone formation, b. dehydrogenation, c. dehydrated N-phenyl side chains, d. hydroxylation (d. N-Phenyl side chain, d2. indole ring, d3. naphthyl)

JWH-030

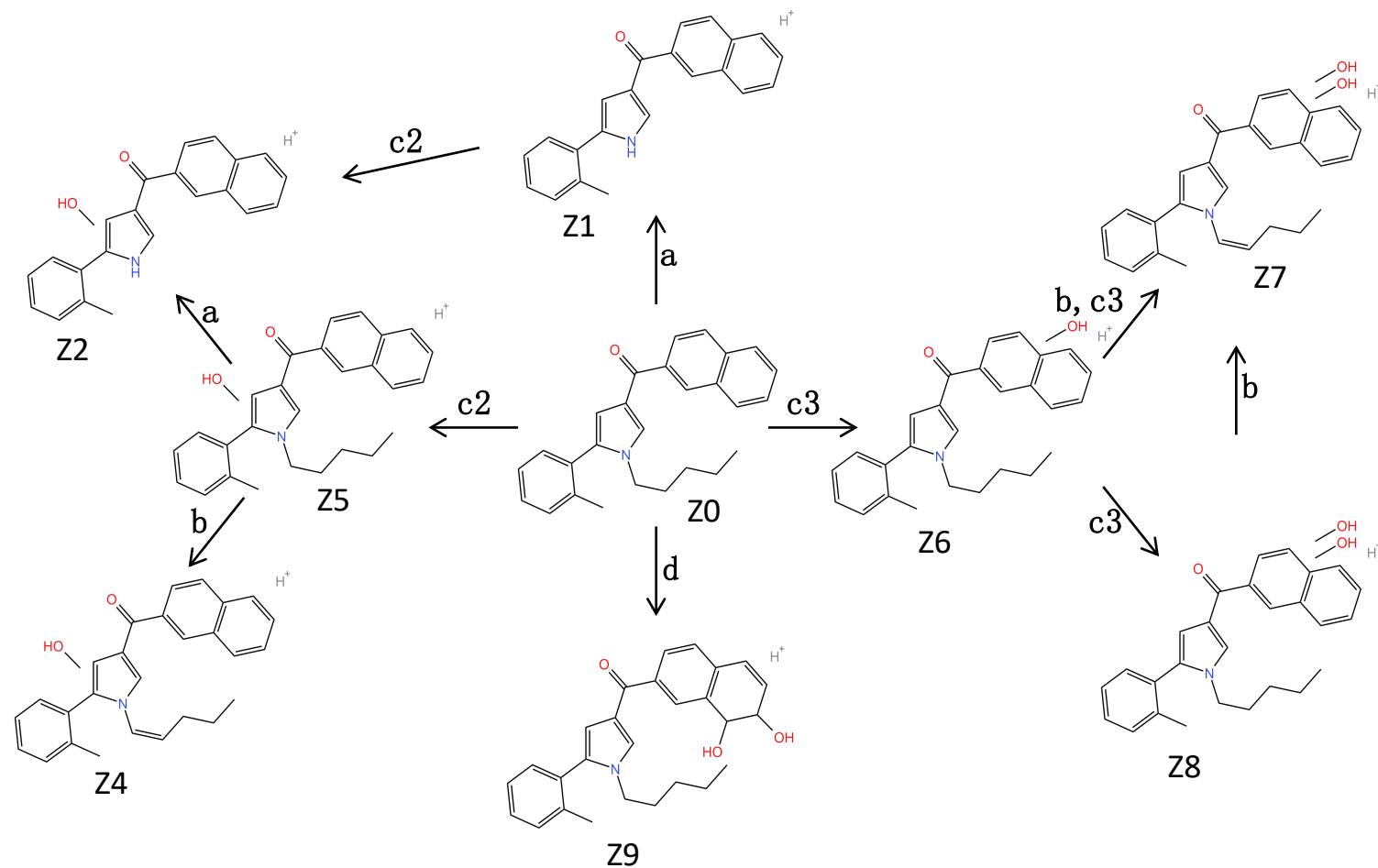


a. dehydrogenation, b. hydroxylation (b1. N-alkyl side chains, b2. naphthyl) , c. ketone formation, d. dihydrodiol



a. ketone formation, b.defluorination, c. N- alkyl side chain removal, d. dehydrogenation, e. hydroxylation (e1. N-alkyl side chains, e2.pyrrole ring, e3. naphthyl, e4.phenyl) , f. oxidative defluoridation, g.dihydrodiol

JWH-370



a. N- alkyl side chain removal, b. dehydrogenation, c. hydroxylation (c1. N-alkyl side chains, c2. pyrrole ring, c3. naphthyl) , d. dihydrodiol