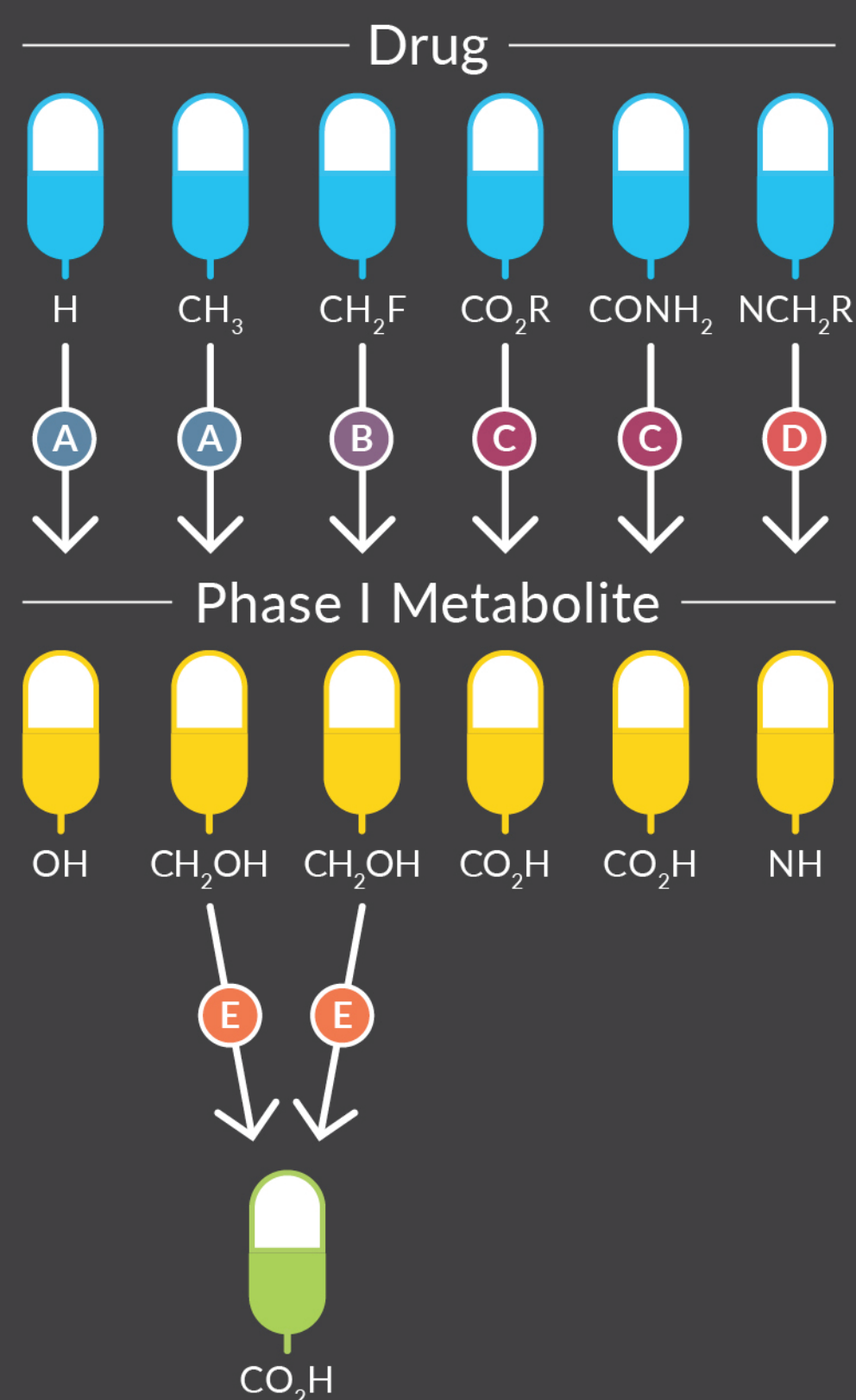




SYNTHETIC CANNABINOID METABOLISM LAB GUIDE

Biotransformation Pathway



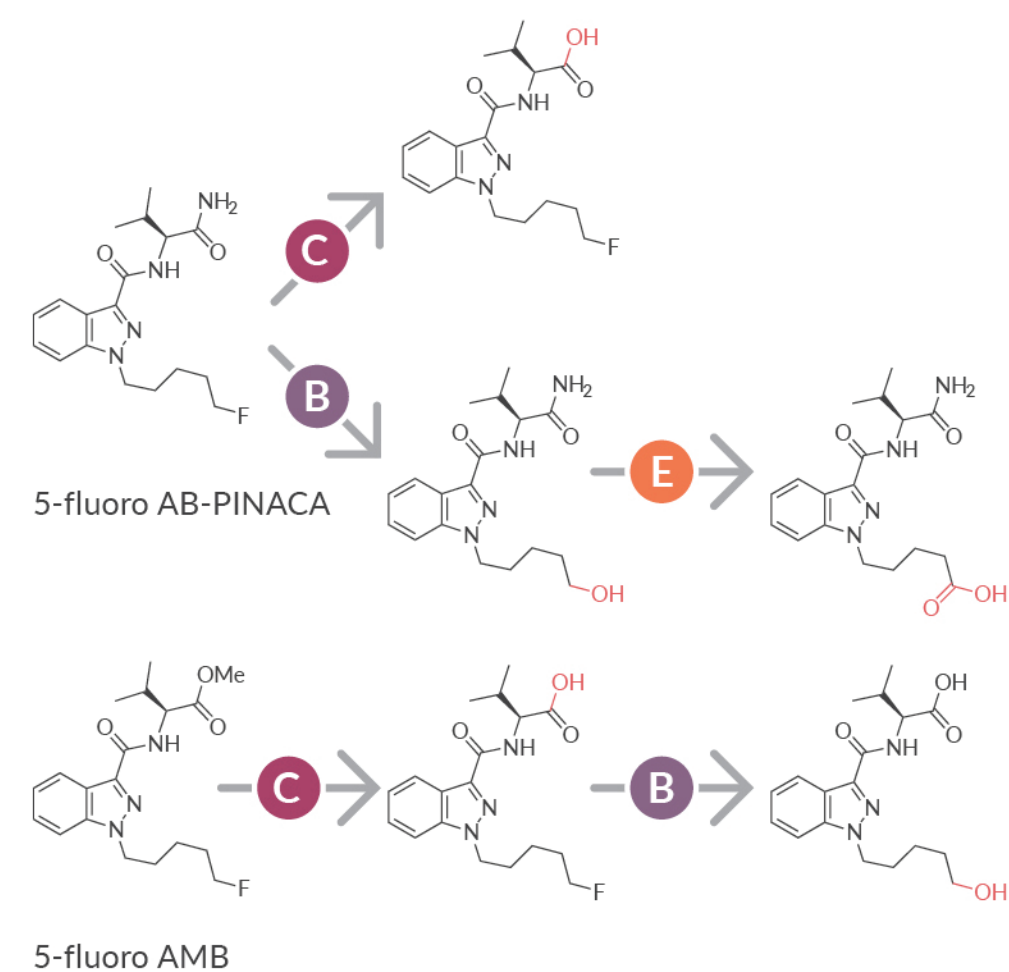
- A Hydroxylation (MW plus 16)
- B Hydrolytic Dehalogenation (MW minus 2)
- C Hydrolysis
- D Dealkylation
- E Oxidation



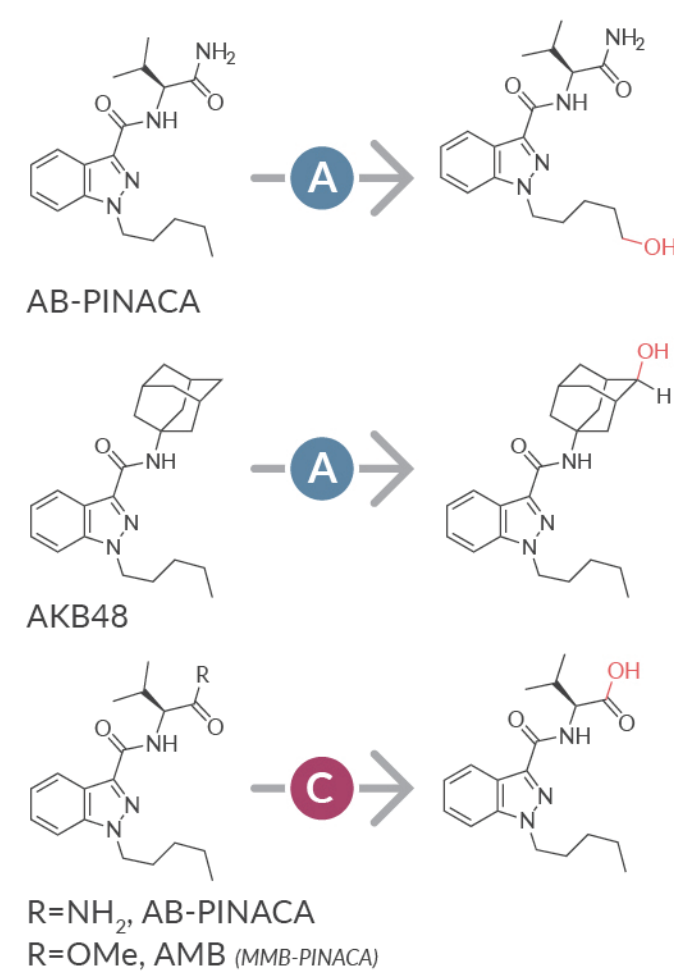
View primary resources used to collate this guide at www.caymanchem.com/SCmetabolism

© 2020 Cayman Chemical - Revised May 2024

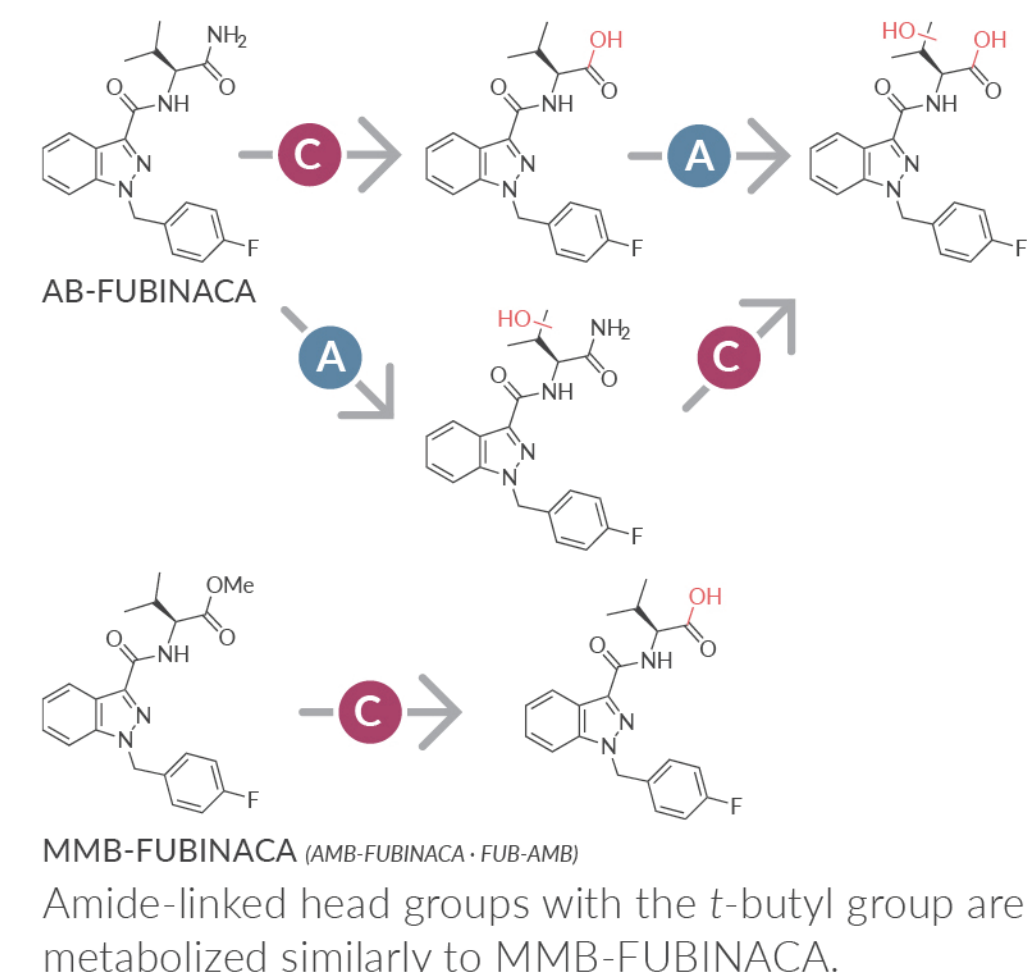
Amide Linker/Fluoropentyl Tail



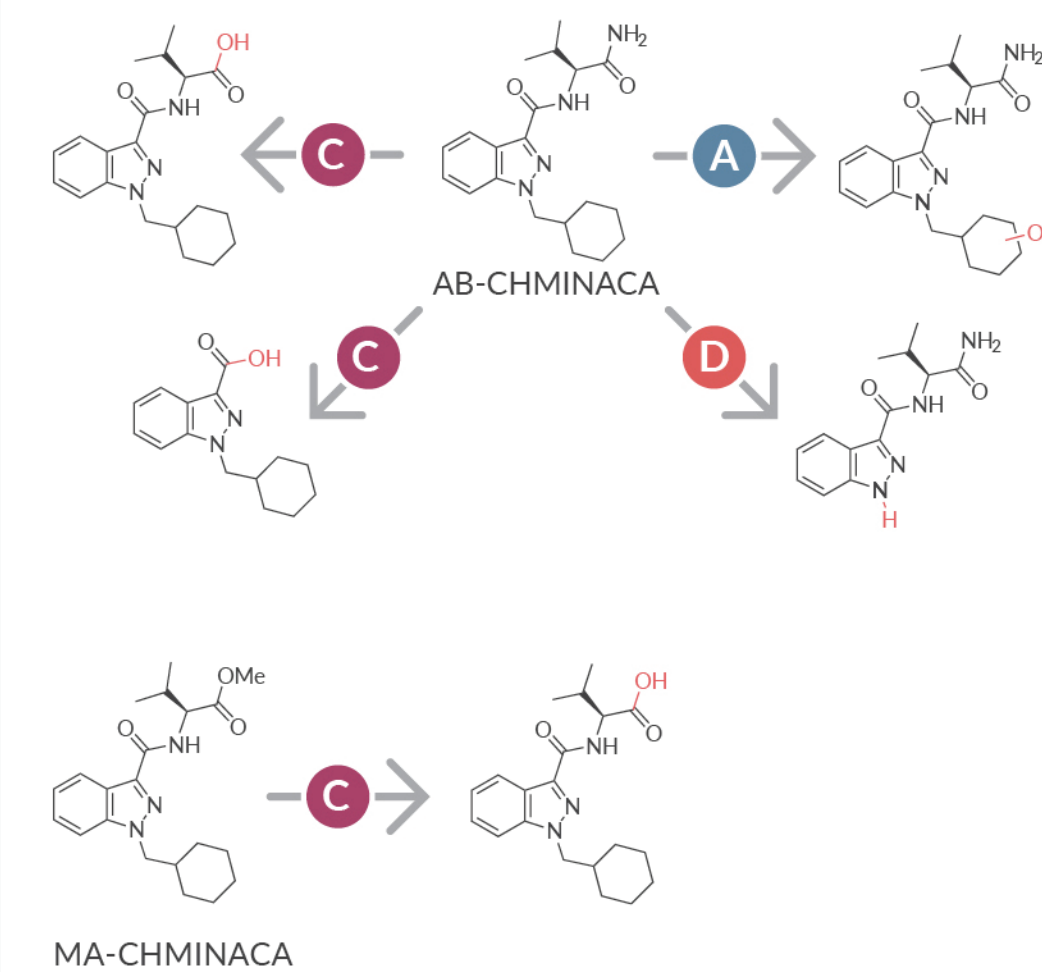
Amide Linker/Pentyl Tail



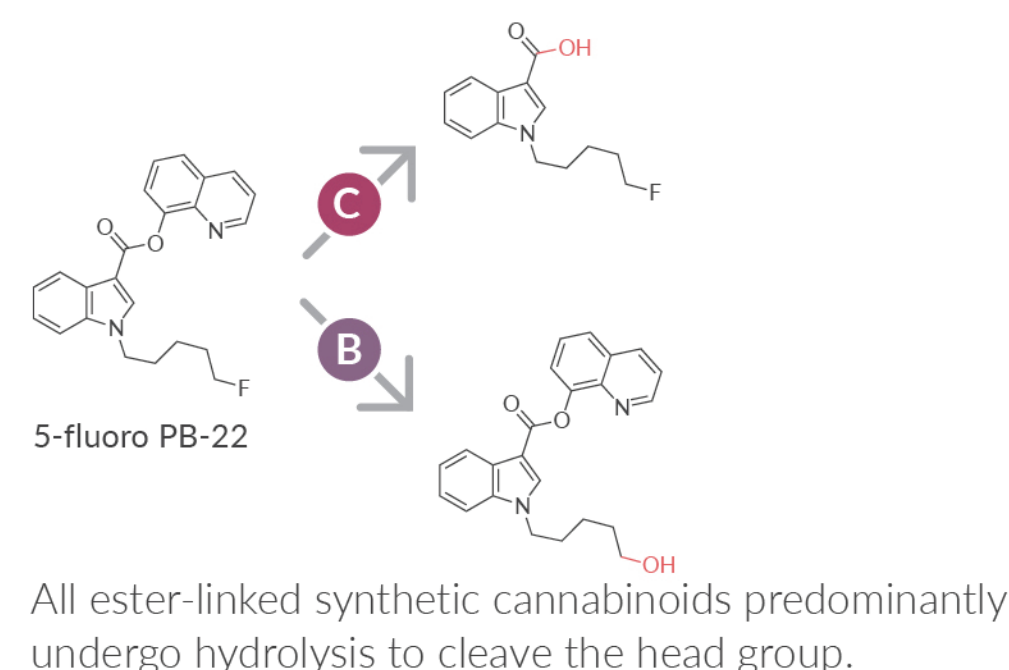
Amide Linker/Fluorobenzyl Tail



Amide Linker/Cyclohexylmethyl Tail

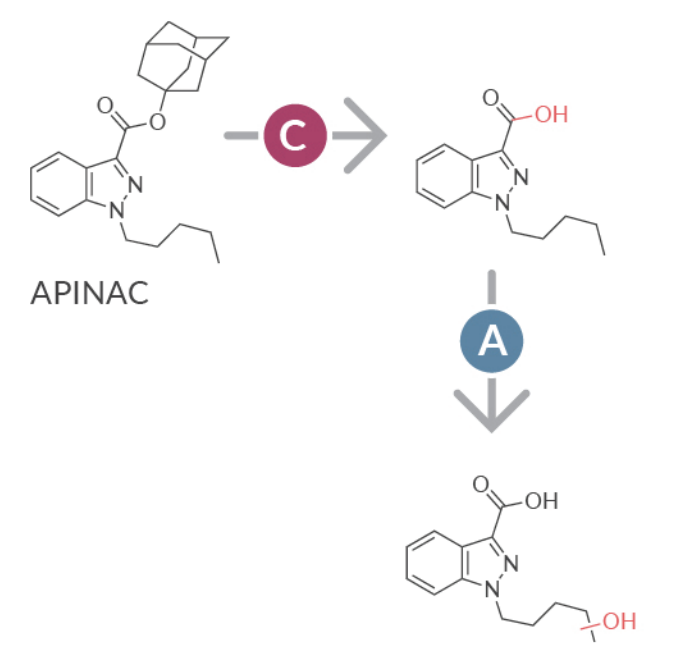


Ester Linker/Fluoropentyl Tail

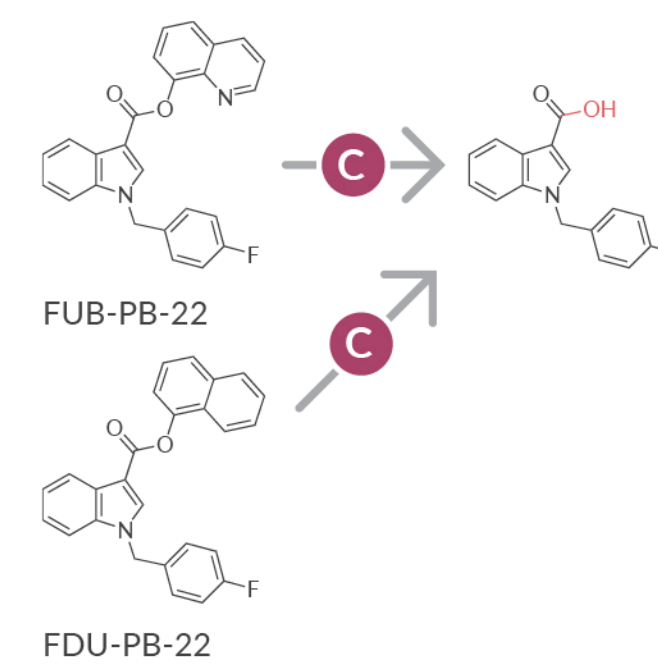


All ester-linked synthetic cannabinoids predominantly undergo hydrolysis to cleave the head group.

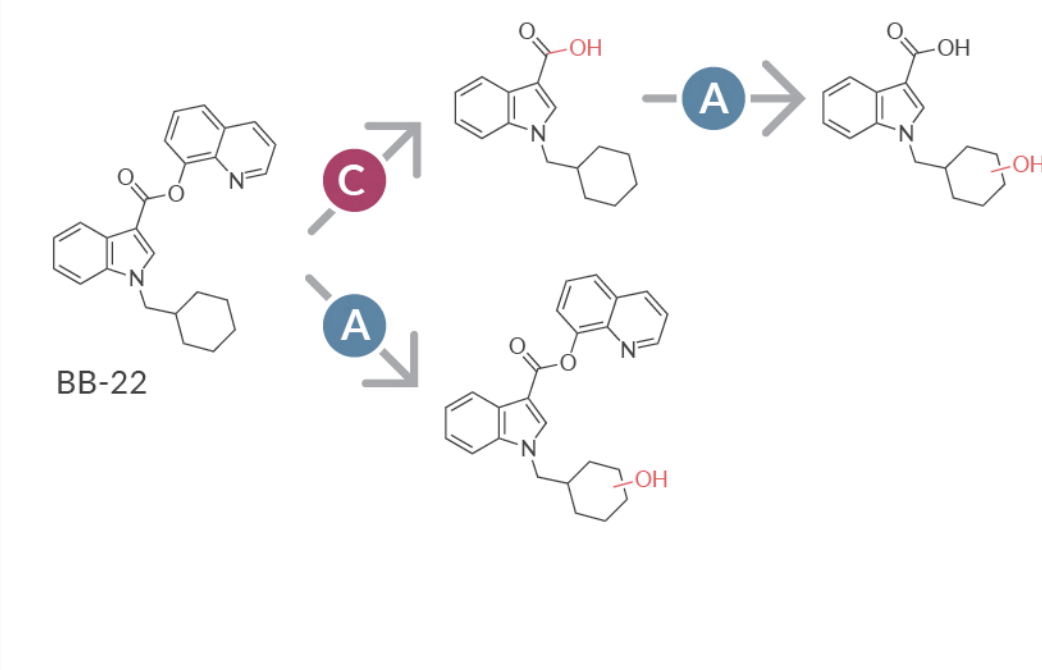
Ester Linker/Pentyl Tail



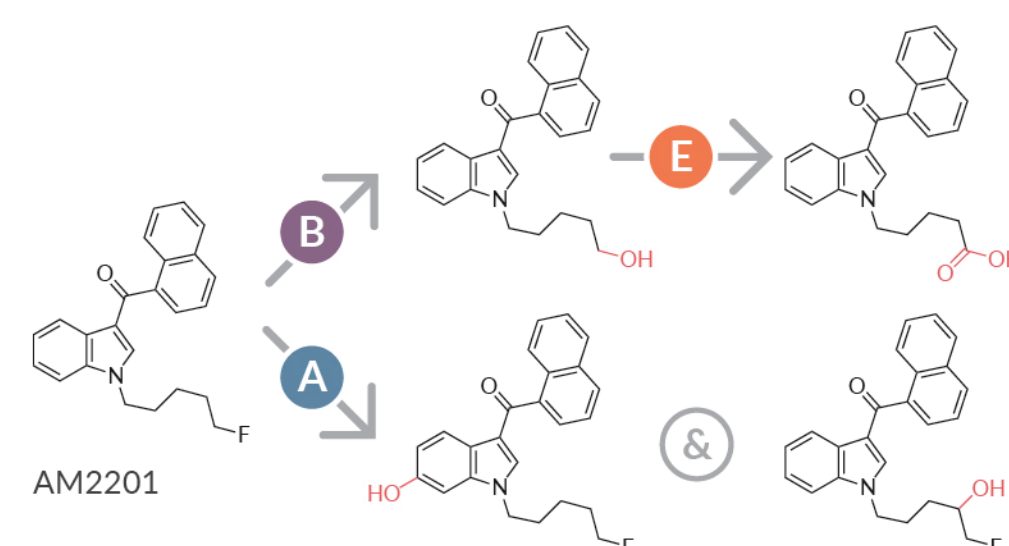
Ester Linker/Fluorobenzyl Tail



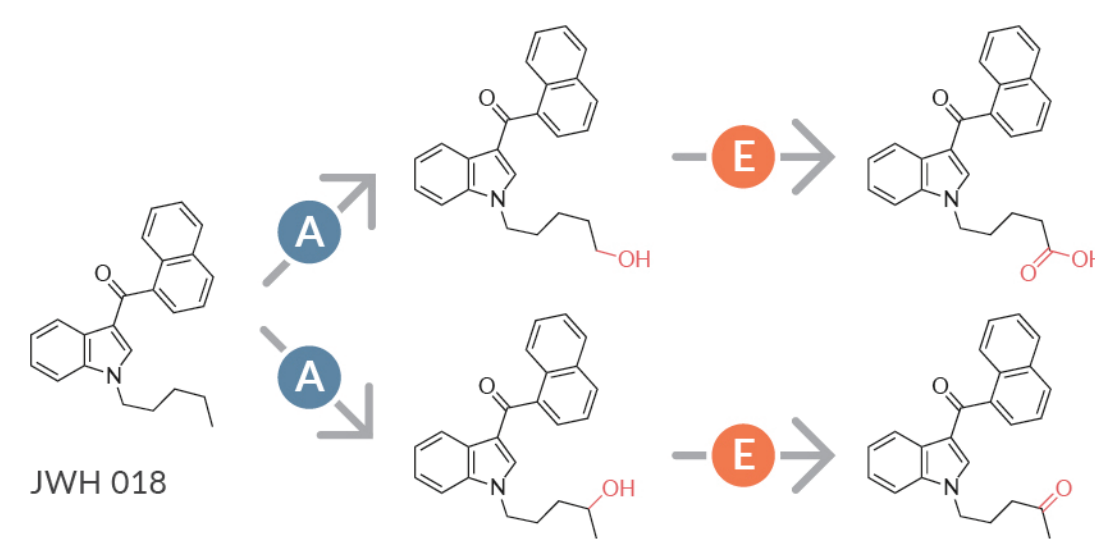
Ester Linker/Cyclohexylmethyl Tail



Carbonyl Linker/Fluoropentyl Tail



Carbonyl Linker/Pentyl Tail



Typical Metabolism Patterns

- All regions (head/core/tail) of classic synthetic cannabinoids can undergo metabolism.
- All hydroxylated metabolites can be further oxidized.
 - Internal secondary alcohols can oxidize to their corresponding ketones.
 - Terminal hydroxy metabolites can oxidize to the carboxylic acid.
- The nature of amide-linked head groups (terminal amide vs. terminal ester) dictates metabolic fate.
- All indole/indazole cores can be hydroxylated, although these are minor products.
- All synthetic cannabinoids containing N-alkyl chains can undergo hydroxylation on the chain.
- The 4-fluorobenzyl tail does not undergo metabolism.
- 5-Fluoropentyl tails can be hydroxylated at the ω-1 site. They can also undergo oxidative defluorination to form the same 5-hydroxypentyl metabolite as N-pentyl tail synthetic cannabinoids.
- All initial metabolites can undergo further biotransformations.