

# PolyCYPs+®

**For metabolite  
synthesis and  
late-stage oxidation**





## KEY FEATURES OF POLYCYPs+

- Catalyzes oxidation of a wide variety of drug compounds
- Delivers phase 1 mammalian metabolites and other oxidized derivatives simultaneously
- Comes with all reagents needed, including a 24-well reaction plates and air-permeable seal
- Easy-to-use - all reagents are provided as lyophilized powders - just add water
- Readily scalable, either in-house or outsource to Hypha

For more information or to place an order email:

[enquiries@hyphadiscovery.com](mailto:enquiries@hyphadiscovery.com)

## PolyCYPs+ biocatalysis kits

### For phase 1 metabolites and oxidised derivatives

PolyCYPs+ kits contain 20 enzymes effective for producing a wide range of phase 1 metabolites. As well as 18 PolyCYPs enzymes, the kit also contains human aldehyde oxidase (AOX1) and the main human hepatic flavin-containing monooxygenase (FMO3), with other human FMO isoforms also available from Hypha.

PolyCYPs® enzymes have been mined from talented actinomycete bacteria in Hypha's biotransformation panel, providing a wide diversity of CYPs that oxidize a variety of drug compounds. Both human and other mammalian CYP-mediated metabolites can be produced.

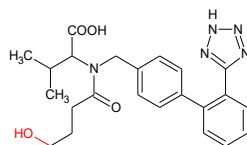
### Proven capabilities

Different PolyCYPs® isoforms are capable of oxidizing a broad range of substrate compounds, including allylic/benzylic -CH, -CH<sub>2</sub>, -CH<sub>3</sub>, -tert-butyl, and iso-propyl moieties, as well as aromatic systems for phenols and epoxides. De-alkylation of N- and O-alkyl moieties is also possible.

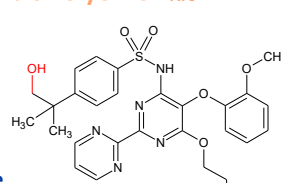
### Metabolite synthesis

PolyCYPs+ kits have a high success rate of producing human metabolites. Enzymes in the kit have been rigorously tested for biocatalytic ability against a diverse panel of substrates with a high % biotransformation rate.

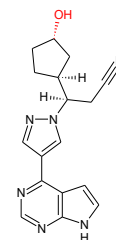
#### Selected drug metabolites produced by enzymes in Hypha's PolyCYPs+ kit



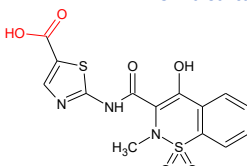
Major human metabolite of valsartan



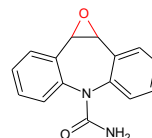
Major human metabolite of bosentan



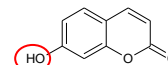
One of several human metabolites of ruxolitinib



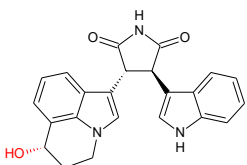
Major human metabolite of meloxicam



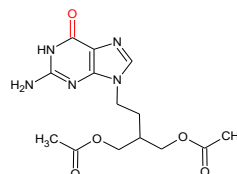
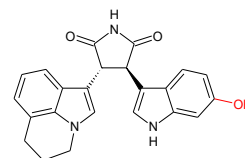
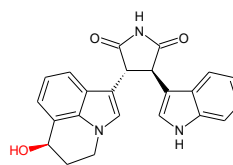
Carbamazepine-10,11-epoxide



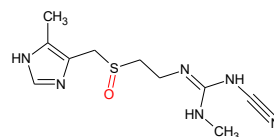
Dealkylated metabolites e.g. of 7-ethoxycoumarin



Human metabolites of tivantinib



AOX1 metabolite of famciclovir



FMO3 mediated S- and N-oxides of cimetidine and moclobemide



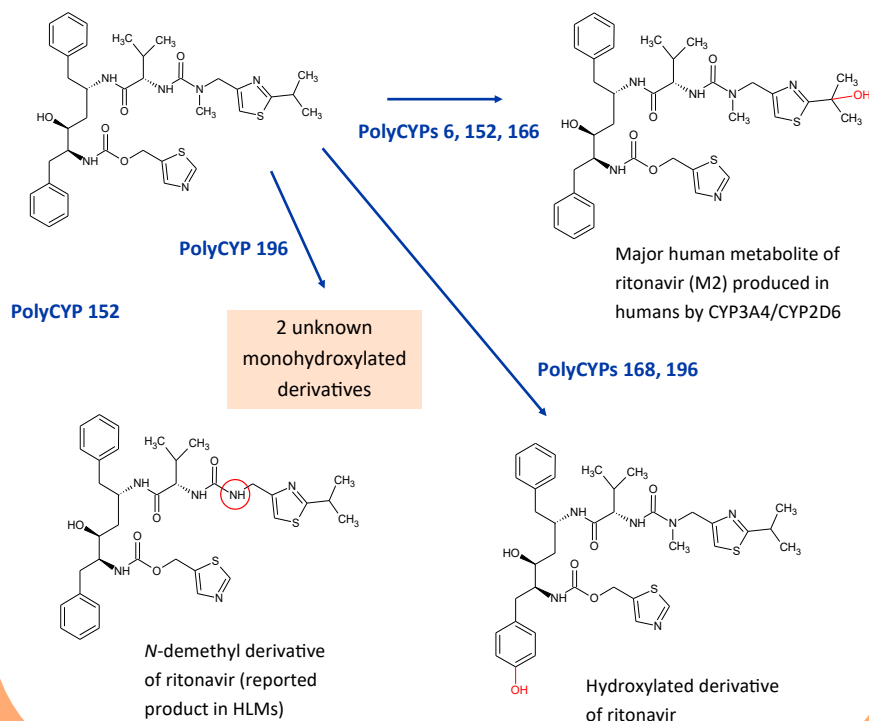
## Late-stage oxidation - PolarExplorer service

PolyCYPs® enzymes are an effective tool for late stage oxidation, providing an opportunity to screen for and scale-up series of multiple hydroxylated derivatives and other analogues in parallel. Benefits such as greater polarity, enhanced metabolic stability, improved PK properties, increased potency and greater selectivity are potentially achievable, as well as exploration of polar SAR.

## Scalability

Reactions are scalable either by resupply of lyophilized enzymes for mg scale production in-house, or larger scale production up to gram scale at Hypha with optional purification and structure elucidation.

### Human metabolites and derivatives of ritonavir produced by PolyCYPs enzymes



## PolyCYPs user feedback

### US large pharma

*"I see different types of biotransformation, for example, N-dealkylation, aryl hydroxylation, alkyl hydroxylation and N-dearylation."*

### European large pharma

*"The protocol is very easy to understand and to follow. I appreciated the positive control for the kit for which there was a very high conversion."*

### US mid size pharma

*"The system is about as easy as it can be."*

### European mid size pharma

*"It has been a pleasure to work with Hypha in this project. Access of hydroxylated compounds through PolyCYPs has saved our company time and resources."*







**New biocatalytic chemistry**

## PolyCYPs+ PRODUCTS



### Screening kit

Quickly generate phase 1 drug metabolites and oxidised derivatives in-house at analytical scale using recombinant enzymes dosed at 50 µg substrate per enzyme vial. Proven to produce human and other mammalian metabolites.



### Scale-up vials

Rapidly scale up a screening reaction in-house using resupplied enzymes in isolatable yields for qNMR and bioassay evaluation, dosed at 1mg substrate per enzyme vial. All cofactors and control compound supplied with the vials.



### Bulk amounts

Access larger quantities of metabolites / derivatives through large scale reactions with enzyme preps or whole cell scale-up at Hypha. Optional purification / structure elucidation at Hypha.

## Contact us

For more information or to place an order email [enquiries@hyphadiscovery.com](mailto:enquiries@hyphadiscovery.com)

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