

Certificate of Analysis

IMCSzyme® RT

genetically modified β -glucuronidase

Catalog Number Quantity

04-RT-005	5 mL
04-RT-010	10 mL
04-RT-50	50 mL

Lot Number:

Test Date:

Exp. Date:

Activity(U/mL):

Product Description:

IMCSzyme® RT is a genetically modified β -glucuronidase (CAS: 9001-45-0; EC: 3.2.1.31) that catalyzes the cleavage of β -D-glucuronic acid from drug metabolites. This product contains a superior recombinant form of β -glucuronidase with enhanced activity¹.

Product Specifications:

Physical description:	Aqueous solution
Specific Activity (units*/mL):	> 200,000
Shelf life**:	Up to 6 Months
Storage temperature:	2 - 8 °C
Sulfatase Activity:	None Detected †

Quality Approval:

Quality Assurance Specialist

* One modified Fishman unit will liberate 1 microgram of phenolphthalein from phenolphthalein glucuronide per hour at 25 °C at pH 6.8 (30 minute assay)

** Shelf life for unopened product in its original sealed packaging

† Sulfatase activity measured using para-nitrocatechol sulfate with 10 μ g of purified enzyme at pH 6.8, 55 °C (1 hour).



IMCSzyme® RT Specifications and Guidelines

Usage Recommendations:

- Use supplied concentrated room temperature buffer (RTB).
- Prepare master mix by combining the components in the following order: RTB, reagent grade water, internal standard in methanol, and IMCSzyme RT.
- Add the master mix to the urine sample and mix.
- **DO NOT VORTEX.**
- Incubate at 20-25 °C (Do not apply heat).

Content and Storage Guidelines:

Enzyme Solution:

Enzyme solution is stable at 2 - 8 °C for up to 6 months in its original sealed package. Original enzyme solution is formulated for long term storage. Diluting the enzyme will negatively impact its shelf life. **Do NOT freeze the enzyme solution. Discard within 30 days after first opening.**

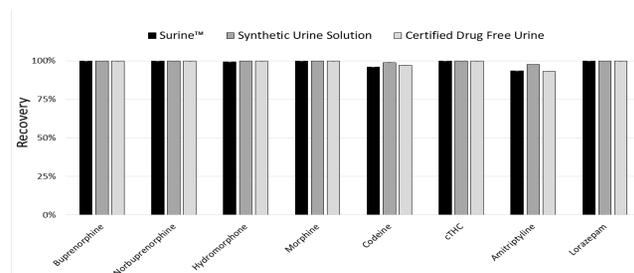
Room Temperature Buffer (RTB):

Room Temperature Buffer is filter-sterilized and is to be used with the enzyme solution to obtain optimal pH. The original solution is stable at 2 - 30 °C up to 2 years in its sealed package. Buffer or master mix solution is stable up to 5 days when stored 2 - 8 °C.

Product Sterility:

IMCS products undergo strict quality control to ensure product sterility. The product can become contaminated if mishandled. Follow aseptic technique to avoid contamination.

Enzyme Performance based on Recommended Hydrolysis Reaction:



This product is covered by one or more patents, pending patents, trademarks and/or copyrights owned or controlled by IMCS Inc.



Enzyme Performance at pH 4-7:

Drug Analytes	Activity at pH 5.5 (pmol/min/mg enzyme)	pH							
		4	4.5	5	5.5	6	6.5	7	
Opiates	Morphine-3	2090	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Hydromorphone	1062	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Oxymorphone	789	Blue	Blue	Blue	Blue	Blue	Blue	Green
	Dihydrocodeine	936	Yellow	Blue	Blue	Blue	Blue	Blue	Yellow
	Codeine	896	Yellow	Blue	Blue	Blue	Blue	Blue	Blue
Opioids	Tapentadol	2900	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Norbuprenorphine	30296	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Buprenorphine	8876	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	O-desmethyltramadol	1144	Blue	Blue	Blue	Green	Green	Green	Green
Benzodiazepines	Oxazepam	7586	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Lorazepam	39278	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Temazepam	4561	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Anti-Depressant	Amitriptyline	1256	Yellow	Yellow	Yellow	Blue	Blue	Blue	Blue
Cannabinoids	cTHC	198478	Blue	Blue	Blue	Blue	Blue	Blue	Blue

Recommended Hydrolysis Reaction Set Up:

50 μ L Urine, 15 μ L Room Temperature Buffer, 135 μ L Water, 10 μ L ISTD in methanol, 5 μ L IMCSzyme RT
Mix well and incubate at room temperature (20-25 °C) for 15 minutes.

Blue > 85% recovery
Green 75-85% recovery
Yellow < 75% recovery

¹Zhang X, Sitasuwan P, Horvath G, Yang J, Nie Y, Marinova M, Lee LA, Wang Q. (2018). Increased activity of β -glucuronidase variants produced by site-directed mutagenesis. *Enzyme Microb Technol.* 109. 20-24.

Contact and Support

For questions, concerns or technical support please contact us:

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Business Hours: Monday-Friday from 9 a.m. - 5 p.m. EST.

Certificate of Analysis and Safety Data Sheets are available under "resources" at www.imcstips.com.

Product Warranty & Satisfaction Guarantee

IMCS warrants that this product conforms to the information contained in this publication at the time of the quality test date. The same efficient enzymatic hydrolysis result can not be guaranteed without the use of the supplied buffer. **For R&D use only. Not for drug, household, or other use.**

