

2017

Zyrtec

Ebru Tasken
Parkland College

Recommended Citation

Tasken, Ebru, "Zyrtec" (2017). *Natural Sciences Poster Sessions*. 111.
<https://spark.parkland.edu/nsps/111>

Open access to this Poster is brought to you by Parkland College's institutional repository, [SPARK: Scholarship at Parkland](#). For more information, please contact spark@parkland.edu.

Generic Name [8]

Cetirizine

Trade Names [8]

Reactine, Zyrtec

Classification [8]Antihistamine, H₁-Receptor Antagonist**Uses [8]**

Zyrtec is used to treat seasonal or perennial allergic rhinitis and chronic idiopathic urticarial

Solubility in water [3]

Soluble-101 mg/L

$$101 \text{ mg/L} = \frac{(1\text{g})}{(1000 \text{ mg})} \frac{(1\text{L})}{(1000 \text{ mL})} = 0.0101 \text{ g}/100 \text{ mL} \quad [2] [6]$$

Dosing [8]

Adult: PO 5-10 mg once/day

How Supplied? [5]

All Day Allergy children's/Cetirizine/Cetirizine Hydrochloride/Zyrtec/Zyrtec Children's oral tab chews 5 mg, 10 mg
 All Day Allergy children's/Cetirizine/Cetirizine Hydrochloride/Zyrtec/Zyrtec Children's/ Zyrtec Children's Allergy/Zyrtec Children's Hives/Zyrtec Pre-filled spoons oral syrup 1mg, 1 mL
 All Day Allergy/Cetirizine/Cetirizine Hydrochloride/Zyrtec/Zyrtec Hives Relief Oral tablet: 5mg, 10 mg
 Cetirizine/ Cetirizine Hydrochloride/PediaCare Children's Allergy Oral Sol: 1 mg, 1 mL, 5 mg, 5 mL
 Zyrtec Children's Allergy Oral Tab orally Dis: 10 mg
 Zyrtec Liquid Gel Oral Cap: 10 mg

Tablets per Chosen Dose [2] [6]

$$\frac{5 \text{ mg}}{1 \text{ dose}} \frac{1 \text{ tablet}}{5 \text{ mg}} = \frac{1 \text{ tablet}}{1 \text{ dose}}$$

Take In [8]

Zyrtec is taken orally and absorbed readily from gastro intestinal (GI) tract

After Absorption [8]

Once absorbed, Zyrtec is a potent H₁-receptor antagonist and an antihistamine. Then it blocks histamine receptor without creating significant anticholinergic or CNS activity. Low lipophilicity combined with its H₁-receptor selectivity probably accounts for its relative lack of anticholinergic and sedative properties. Zyrtec effectively treats allergic rhinitis and chronic urticaria by eliminating or reducing local and systemic effects of histamine release.

Break Down [8]

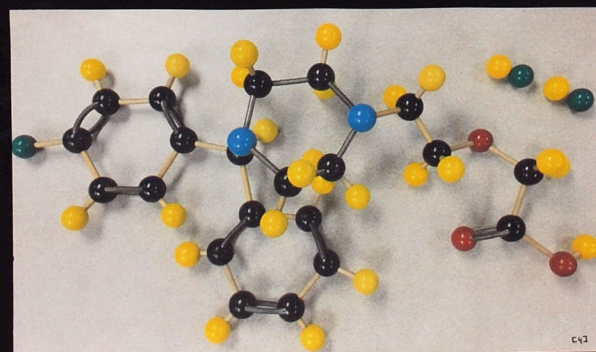
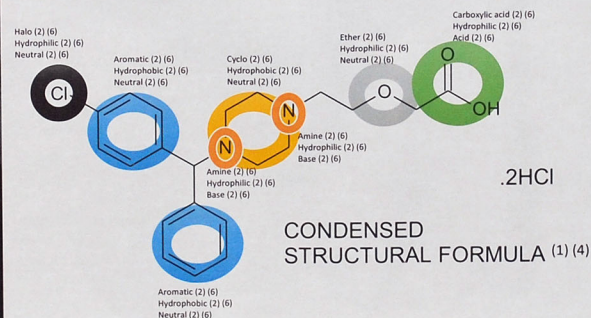
Zyrtec is metabolized minimal by (CYP3A4). CYP3A4 is an enzyme that belongs to P-450 enzyme family, which is found in liver. These enzymes execute oxidation reactions.

Elimination [8]

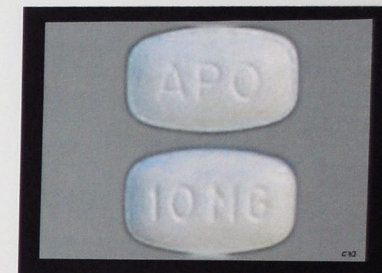
60% of the drug taken is unchanged in urine within 24 hours and 5% in feces.

**Chemical Name [4]**

2-[2-[4-[(4-Chlorophenyl)-phenylmethyl]-1-piperazinyl]ethoxy]acetic acid; [2-[4-(p-chloro-a-phenylbenzyl)-1-piperazinyl]ethoxy]acetic acid

Chemical Formula[4]C₂₁H₂₅ClN₂O₃ · 2HCl

**EBRU TASKAN
 PARKLAND COLLEGE
 CHE 106-002**

**Molar Mass [2] [6]**

21 moles C	$\frac{(12.01 \text{ g})}{(1 \text{ mole C})}$	= 252.21 g
25 moles H	$\frac{(1.01 \text{ g})}{(1 \text{ mole H})}$	= 25.25 g
1 mole Cl	$\frac{(35.45 \text{ g})}{(1 \text{ mole Cl})}$	= 35.45 g
2 moles N	$\frac{(14.01 \text{ g})}{(1 \text{ mole N})}$	= 28.02 g
3 moles O	$\frac{(16.00 \text{ g})}{(1 \text{ mole O})}$	= 48.00 g
2 moles H	$\frac{(1.01 \text{ g})}{(1 \text{ mole H})}$	= 2.02 g
2 moles Cl	$\frac{(35.45 \text{ g})}{(1 \text{ mole Cl})}$	= 70.90 g

461.85 g/1 mole C₂₁H₂₅ClN₂O₃·2HCl**Literature value for molar mass [4]**

461.81 g/1 mole

References

- Advanced Chemistry Development, Inc. (2017). *ACD/ChemSketch Freeware* [Computer Software]. Retrieved from <http://www.acdlabs.com/resources/freeware/chemsketch/>
- (2016). *Organic Chemistry*. In Drake, S. A. (Ed.) *Chemistry 106 Classroom Supplement Fall 2016 Revision*. Champaign, IL: Stipes Publishing L. L. C.
- Genome Alberta, Genome Canada, GenomeQuest Inc. and the Departments of Computing Sciences & Biological Sciences at the University of Alberta specifically the Dr. David Wishart Research Group. (2017, February 13). *Cetirizine*. *DrugBank*. Retrieved from <https://www.drugbank.ca/DB00341>
- (2013). *Cetirizine*. In O'Neil, M. J., Heckelman, P. E., Dobbelaar, P.H., & Roman, K. J. (Eds.) *The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals* (pp. 357-358). Cambridge, UK: Royal Society of Chemistry.
- Physicians' Desk Reference. (2017). *Drug summary cetirizine hydrochloride*. *PDR.net*. Retrieved from <http://www.pdr.net/drug-summary/Zyrtec-Tablets-cetirizine-hydrochloride-34923500#4>
- Timberlake, K. C. (2015). *Chemistry: An Introduction to General, Organic, and Biological Chemistry, 12th ed.* Upper Saddle River, NJ: Pearson Education, Inc.
- United States National Library of Medicine National Institutes of Health. (2012, November 26). *Pill Images of Cetirizine*. *Pillbox*. Retrieved from <https://pillbox.nlm.nih.gov/assets/large/003783635.jpg>
- Wilson, B. A., Shannon, M. T., & Shields, K. M. (2017). *Cetirizine*. *Pearson Nurse's Drug Guide 2017* (pp. 314-315). Hoboken, NJ: Pearson Education, Inc.
- Zyrtec Logo (2017, May 1). Retrieved from <https://www.zyrtec.com>