

2012

Zyrtec

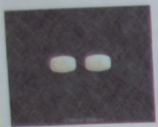
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Recommended Citation

Ford, Regan, "Zyrtec" (2012). *Natural Sciences Poster Sessions*. 31.
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PHOTO OF MEDICINE: 3



CHEMICAL FORMULA: $C_{21}H_{23}ClN_3O_2$

CHEMICAL NAMES:

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

DRUG SOLUBILITY IN WATER: $6.58 \times 10^{-2} \text{ g/l}^1$

WHAT IS THE HALF LIFE OF YOUR DRUG?

The half life for Zyrtec is 7.4 h (hours).¹

MILLIGRAMS TO MOLES CONVERSION FACTOR:

$(5 \text{ mg})(388.89/1 \text{ mg})(1 \text{ g}/1000 \text{ mg})(1 \text{ mole}/388.9)(6.02 \times 10^{23} \text{ molecules}/1 \text{ mole}) = 1.705589 \times 10^{21}$

ROUNDED MOLAR MASS: 389 g/mol²

MOLAR MASS CALCULATED²:

$C = (12.01 \text{ g})(21) = 252.2 \text{ g}$
 $H = (1.01 \text{ g})(25) = 25.3 \text{ g}$
 $Cl = (35.45 \text{ g})(1) = 35.45 \text{ g}$
 $N = (14.01 \text{ g})(2) = 28.0 \text{ g}$
 $O = (16.00 \text{ g})(3) = 48.0 \text{ g}$
 $= 389.0 \text{ g/mol}$

LITERATURE VALUE FOR MOLAR MASS:
388.89 g/mol²

LITERATURE VALUE FOR MOLAR MASS
ROUNDED: 389 g/mol²

DOES YOUR ROUNDED LITERATURE VALUE
MATCH YOUR CALCULATED VALUE? Yes,²

ZYRTEC

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CHE106-003

GENERIC DRUG NAME: Cetirizine¹

TRADE NAMES: Reactine, Zyrtec, Xyzal¹

ONE ILLNESS THIS DRUG IS USED TO
TREAT: Zyrtec is used to treat allergic rhinitis.¹

LABELLED DRUG USES: Zyrtec is to treat
seasonal and perennial allergic rhinitis and chronic
idiopathic urticaria.¹

UNLABELED USES: There are no unlabeled uses
for this drug.¹

DRUG CLASSIFICATION: Antihistamine; H1-
Receptor antagonist; therapeutic antihistamine; non-
sedating¹

WHO DOES THIS DRUG TREAT? Zyrtec can be
used by adults. The adult dosage is 5-10 mg/day.¹

WHICH AVAILABILITY DIVIDED BY THE SMALLEST DOSAGE WILL GIVE YOU THE SMALLEST WHOLE NUMBER?

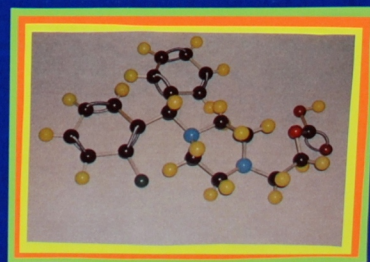
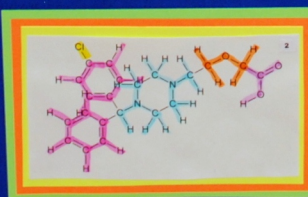
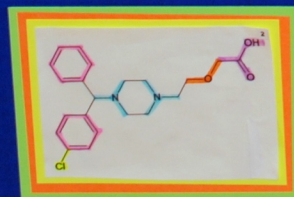
Both the 5 milligram tablets and the 5 milligram
chewable tablets would give the same amount per
dosage: 1.
 $(5 \text{ mg})(1 \text{ tablet}/5 \text{ mg}) = 1 \text{ tablet}^2$

WHAT IS THE SMALLEST DOSAGE FOR THIS POPULATION?

The smallest dosage prescribed for adults is 5
milligrams per day.¹

WHAT IS THE AVAILABILITY FOR THIS DRUG?

- 5 mg. 10mg tablets;
- 5mg. 10 mg chewable tablets;
- 5mg/mL, 2.5 mg/mL syrup¹



Halohalkane (hydrophilic; neither) - Yellow
 Aromatic (hydrophobic; neither) - Pink
 Amine (hydrophilic; basic) - Blue
 Ether (hydrophilic; neither) - Orange
 Carboxylic Acid (hydrophilic; acidic) - Purple



HOW DOES ONE'S BODY TAKE IN THIS MEDICINE?

This medicine is to be taken orally. It is readily
absorbed from the gastrointestinal tract. This drug
is at its peak about one hour after it is taken.¹

WHAT DOES THE BODY DO WITH THIS DRUG ONCE IT HAS BEEN ABSORBED?

The body uses this drug to treat seasonal
allergies, also known as allergic rhinitis and
chronic urticaria.¹

HOW DOES THE BODY BREAK DOWN THIS DRUG?

Zyrtec is oxidized minimally by CYP3A45, which is
an enzyme.¹

HOW DOES THE BODY DISPOSE OF THIS DRUG?

60% of Zyrtec is eliminated through one's urine,
unchanged within 24 hours. 5% of Zyrtec is
eliminated through feces, also within 24 hours.¹

WHAT IS THE COMPLETE ROUTE AND DOSAGE FOR THIS 1 POPULATION AND ONE TREATMENT BY THIS DRUG?

This drug treats allergic rhinitis. Adult: PO 5-10 mg
once/day.¹

ROUTE & DOSAGE IN PATIENTS TERMS:

An adult should take 5-10 milligrams by mouth one
time per day.¹

WORK CITED:

1. Wilson, R. A.; Shannon, M. T.; Shields, K. M. Cetirizine. *Persson Nurse's Drug Guide 2012*, Persson Education, Inc.: Upper Saddle River, NJ, 2012; pp 288-289.
2. Cetirizine. In *The Merck Index An Encyclopedia of Chemicals, Drugs, and Biologicals*, 14th ed.; O'Neil, M. J.; Mackelmann, P. E.; Koch, G. B.; Roman, K. J., Eds.; Merck Research Laboratories: Whitehouse Station, NJ, 2006; p 334.
3. Emedicine health. http://www.emedicinehealth.com/drug_cetirizine/article_em.htm, accessed March 27, 2012; Zyrtec.
4. DrugBank. <http://www.drugbank.ca/drugs/DB00241>, accessed April 17, 2012; Zyrtec.
5. Addicted to Boring. <http://www.addictedtoboring.com/2012/03/10/zyrtec-21-cougar-and-cve-scenarios/> (April 18, 2012). Zyrtec Photo.
6. Chemistry An Introduction to General, Organic, and Biological Chemistry, Custom Edition for Parkland College 11th edition, Timberlake, Pearson, Boston, MA, 2011b, p354-384.