

DRUG
INTERACTION
SOLUTIONS

Clinical Organ Impairment DATASET

Transforming **scientific data** into **clinical knowledge**


SCHOOL OF PHARMACY
UNIVERSITY of WASHINGTON




Clinical Organ Impairment


DATASET


The Clinical Organ Impairment Dataset contains study results from renal and hepatic impairment studies.


 **Detailed study information** regarding design, population, degree of organ impairment, drug dosing, PK, PD, and safety results are extracted from published articles (citations) and NDA reviews. Common metrics (percent changes in AUC, plasma concentrations, oral and renal clearance values) are used across all studies to allow metadata analysis of quantitative results.

 **Study results** are organized according to the overall effect and the severity of the disease:

- Users can focus on a specific object drug or disease severity (mild, moderate, or severe)
- Explicit changes in exposure can be searched
(Example: *"Find all drugs with at least 2-fold change in AUC in patients with a specific degree of impairment"*)

 **Comprehensive PK parameters** for the object drug and its metabolites are available for each population studied and are compared to a healthy control population.

 **Several pre-formulated queries** allow users to retrieve the organ impairment dataset by drug name, changes in exposure, or disease severity.

 **Results** can be viewed, customized, and downloaded in multiple formats, allowing users to compile and organize the large body of information available.

 druginteractionsolutions.org

FROM A CITATION OR NDA/BLA REVIEW

The latest, most relevant, peer-reviewed publications and regulatory documents are identified and fully analyzed. Study protocol and results are manually curated to update the knowledgebase on a daily basis.

1

NCBI Resources How To

PubMed.gov PubMed 29443456[uid]

US National Library of Medicine National Institutes of Health

Create RSS Create alert Advanced

Format: Abstract - Send to -

Clin Pharmacol Drug Dev. 2018 May;7(4):365-372. doi: 10.1002/cpdd.438. Epub 2018 Feb 14.

Pharmacokinetics and Safety of Bazedoxifene in Hepatically Impaired and Healthy Postmenopausal Women.

McKeand W¹, Baird-Bellaire S², Elmer J¹, Patat A².

Author information

Abstract

Bazedoxifene, a selective estrogen receptor modulator with proestrogenic effects on bone and lipid metabolism and antiestrogenic effects on the breast and endometrium, is a treatment option for osteoporosis in postmenopausal women. It is extensively metabolized by the liver; therefore, a decrease in liver function was expected to decrease bazedoxifene clearance. This single-dose, open-label, inpatient/outpatient, nonrandomized study assessed the pharmacokinetics of bazedoxifene 20 mg in 18 postmenopausal women with hepatic impairment and 18 matched healthy postmenopausal women. Bazedoxifene elimination was slower, and exposure was higher, in hepatically impaired subjects compared with healthy subjects. In subjects with severe (Child-Pugh C) liver impairment, bazedoxifene mean half-life was 50% longer than that of healthy subjects. Area under the concentration-time curve geometric mean ratios (90%CI) for Child-Pugh A, B, and C liver impairment vs healthy subjects were 243% (156-379), 209% (135-326), and 368% (236-572), respectively.

1

U.S. Department of Health & Human Services

FDA U.S. FOOD & DRUG ADMINISTRATION

Home Food Drugs Medical Devices Radiation-Emitting Products Vaccines, Blood & Biologics

Drug Approval Package

FDA Home Drugs Drug Approvals and Databases Drugs@FDA

Duavee (conjugated estrogens and bazedoxifene)

Application No.: 022247

Approval Date: 10/3/2013

Most often analyzed files:

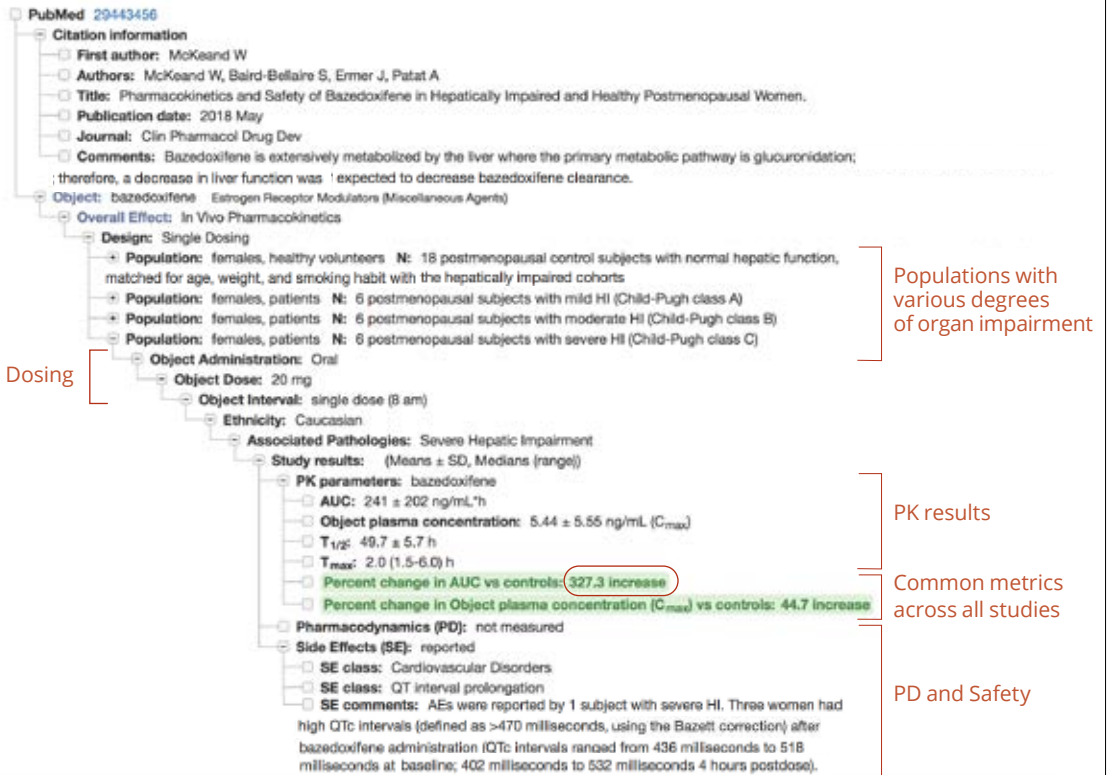
- Printed labeling
- Multi-discipline review
- Chemistry review(s)
- Other review(s)

TO A FULLY CURATED DATASET

Prior to integration, all data are carefully and critically evaluated. The richness of each citation, including relevant insights, is exploited, generating a highly detailed dataset.

Tree View of Citation Data

2



Bazedoxifene shows an AUC increase of 327.3% in patients with severe hepatic impairment. What other drugs have an AUC change of at least 2-fold in these patients?

POWERFUL TOOL FOR DATA INTEGRATION: FROM ONE CITATION TO METADATA ANALYSIS

The data are formatted for immediate use and can be filtered and re-arranged to allow meta-analysis of multiple results.

Query all drugs exhibiting exposure increases of at least 2-fold in patients with severe hepatic impairment

3

PK of Object with Hepatic / Renal Impairment Percent Change in AUC or CL or CL_{renal} with Hepatic / Renal Impairment

Find Objects with Hepatic Renal Impairment

providing percent change in AUC CL CL_{renal} AUC or CL or CL_{renal}

with associated Pathologies Severe Hepatic Impairment ▾

where value is greater than or equal to ▾ 100 %

Table View of Query Results

4

Showing 1 to 63 of 63 entries Show / hide columns: Copy Excel CSV Print

Object	Therapeutic Class	Object Administration	Object Dose	Object Interval	Population	AUC	Percent Change AUC vs Controls	Accession # or NDA #
sofosbuvir	Antivirals	Oral	200 mg (8.5 days)	twice daily with the last dose in the morning of Day 7	patients (N = 4 subjects with severe HI (Child-Pugh class C; score 10-15))	26447 (20) ng/mL ^h (AUC0-tau)	3109.6	PubMed 24704773
glecaprevir	Protease Inhibitors	Oral	300 mg (coadministered with 120 mg pibrentasvir)	single dose	patients (N = 6 subjects with severe hepatic impairment (Child Pugh C))	61600 (42) ng/mL ^h	1479.5	PubMed 30341499
praziquantel	Antiparasitics	Oral	40 mg/kg	single dose after an overnight fast	patients (N = 10 Egyptian subjects with schistosomiasis and severe hepatic impairment (Child-Pugh B))	45.357 ± 17.508 µg/mL ^h	1400.4	PubMed 7810816
raloxifene	Antidiabetics	Other	0.3 mg	single dose as Subosone® sublingual tablet	patients (N = 8 subjects with severe HI (Child-Pugh C))	1.28 (80.2) ng/mL ^h (AUC0-tau)	1298.9	PubMed 25623622

Multiple formats for viewing and downloading

Obtain a complete list of drugs that may need dosing adjustment in patients with severe hepatic impairment

CLINICAL ORGAN IMPAIRMENT DATASET IN NUMBERS

(as of April 16, 2020)

RENAL IMPAIRMENT

859 citations / **2,584** entries

183 NDAs/BLAs / **573** entries

HEPATIC IMPAIRMENT

535 citations / **1,235** entries

189 NDAs/BLAs / **469** entries

Dedicated organ impairment queries with **123** possible searches

932

drugs evaluated in organ impairment studies

APPLICATIONS OF THE CLINICAL ORGAN IMPAIRMENT DATASET



PROVIDES CONTEXT for **RESULTS OBTAINED** with candidate compounds



HELPS DEVELOP OVERALL REGULATORY STRATEGY and optimize renal and hepatic impairment trials:

- Guides choice of appropriate study design
- Refines inclusion/exclusion criteria for control population and patients with organ impairment
- Helps select dose regimen of object drug
- Provides PK variability data for power calculations



SUPPORTS PBPK MODELING and **SIMULATIONS**

with drug and disease parameters, changes in exposure validation set



ACCESSES REGULATORY ORGAN IMPAIRMENT STUDIES for recently marketed drugs



PROVIDES REFERENCE RESOURCE for **ASSESSMENT of DRUG SAFETY** in patients with different severity of renal or hepatic function deficiency

CONTACT US

didbase@uw.edu

Isabelle Ragueneau-Majlessi / +1 (206) 543-4669

Jingjing Yu / +1 (206) 221-2856

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