

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use SYMPAZAN[®] safely and effectively. See full prescribing information for SYMPAZAN[®].

SYMPAZAN[®] (clobazam) oral film, CIV
Initial U.S. Approval: 2011

WARNING: RISKS FROM CONCOMITANT USE WITH OPIOIDS; ABUSE, MISUSE, AND ADDICTION; and DEPENDENCE AND WITHDRAWAL REACTIONS

See full prescribing information for complete boxed warning

- Concomitant use of benzodiazepines and opioids may result in profound sedation, respiratory depression, coma, and death. Reserve concomitant prescribing of these drugs in patients for whom alternative treatment options are inadequate. Limit dosages and durations to the minimum required. Follow patients for signs and symptoms of respiratory depression and sedation. (5.1, 7.1)
- The use of benzodiazepines, including SYMPAZAN, exposes users to risks of abuse, misuse, and addiction, which can lead to overdose or death. Before prescribing SYMPAZAN and throughout treatment, assess each patient's risk for abuse, misuse, and addiction (5.2).
- Abrupt discontinuation or rapid dosage reduction of SYMPAZAN after continued use may precipitate acute withdrawal reactions, which can be life-threatening. To reduce the risk of withdrawal reactions, use a gradual taper to discontinue SYMPAZAN (2.2, 5.3).

RECENT MAJOR CHANGES

Boxed Warning	2/2021
Dosage and Administration (2.2)	2/2021
Warnings and Precautions (5.2, 5.3)	2/2021

INDICATIONS AND USAGE

SYMPAZAN[®] is a benzodiazepine indicated for adjunctive treatment of seizures associated with Lennox-Gastaut Syndrome (LGS) in patients 2 years of age or older (1).

DOSAGE AND ADMINISTRATION

- For doses above 5 mg/day, administer in two divided doses (2.1)
- Patients weighing 30 kg or less: Initiate at 5 mg daily, and titrate as tolerated up to 20 mg daily (2.1)
- Patients weighing greater than 30 kg: Initiate at 10 mg daily, and titrate as tolerated up to 40 mg daily (2.1)
- Dosage adjustment is needed in following groups:
 - Geriatric patients (2.4, 8.5)

- Known CYP2C19 poor metabolizers (2.5)
- Mild or moderate hepatic impairment; no information for severe hepatic impairment (2.6, 8.8)
- Can be taken with or without food (2.3)
- Do not administer with liquids (2.3)

DOSAGE FORMS AND STRENGTHS

Oral Film: 5 mg, 10 mg and 20 mg (3)

CONTRAINDICATIONS

History of hypersensitivity to the drug or its ingredients (4)

WARNINGS AND PRECAUTIONS

- Somnolence or Sedation: Monitor for central nervous system (CNS) depression. Risk may be increased with concomitant use of other CNS depressants (5.4, 5.5)
- Serious Dermatological Reactions (including Stevens-Johnson Syndrome and toxic epidermal necrolysis): Discontinue SYMPAZAN[®] at first sign of rash unless the rash is clearly not drug-related (5.6)
- Suicidal Behavior and Ideation: Monitor for suicidal thoughts or behaviors (5.7)

ADVERSE REACTIONS

Adverse reactions that occurred at least 10% more frequently than placebo in any clobazam dose included constipation, somnolence or sedation, pyrexia, lethargy, and drooling (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Aquestive Therapeutics at 1-877-394-5045 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

DRUG INTERACTIONS

- Alcohol: Increases blood levels of clobazam by about 50% (7.2)
- Drugs metabolized by CYP2D6: Lower doses of these drugs may be required when used concomitantly with SYMPAZAN[®] (7.3)
- Strong or Moderate CYP2C19 Inhibitors: Dosage adjustment of SYMPAZAN[®] may be necessary (7.4)
- Cannabidiol: May increase risk of SYMPAZAN-related adverse reactions; consider dosage adjustment if this occurs (7.4)

USE IN SPECIFIC POPULATIONS

Pregnancy: Based on animal data, may cause fetal harm (8.1)

See 17 for PATIENT COUNSELING INFORMATION and Medication Guide.

Revised: 3/2021

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FULL PRESCRIBING INFORMATION

WARNING: RISKS FROM CONCOMITANT USE WITH OPIOIDS; ABUSE, MISUSE, AND ADDICTION; and DEPENDENCE AND WITHDRAWAL REACTIONS

- Concomitant use of benzodiazepines and opioids may result in profound sedation, respiratory depression, coma, and death. Reserve concomitant prescribing of these drugs in patients for whom alternative treatment options are inadequate. Limit dosages and durations to the minimum required. Follow patients for signs and symptoms of respiratory depression and sedation [see *Warnings and Precautions (5.1)*, and *Drug Interactions (7.1)*].
- The use of benzodiazepines, including SYMPAZAN, exposes users to risks of abuse, misuse, and addiction, which can lead to overdose or death. Abuse and misuse of benzodiazepines commonly involve concomitant use of other medications, alcohol, and/or illicit substances, which is associated with an increased frequency of serious adverse outcomes. Before prescribing SYMPAZAN and throughout treatment, assess each patient's risk for abuse, misuse, and addiction [see *Warnings and Precautions (5.2)*].
- The continued use of benzodiazepines, including SYMPAZAN, may lead to clinically significant physical dependence. The risks of dependence and withdrawal increase with longer treatment duration and higher daily dose. Abrupt discontinuation or rapid dosage reduction of SYMPAZAN after continued use may precipitate acute withdrawal reactions, which can be life-threatening. To reduce the risk of withdrawal reactions, use a gradual taper to discontinue SYMPAZAN or reduce the dosage [see *Dosage and Administration (2.2)* and *Warnings and Precautions (5.3)*].

1 INDICATIONS AND USAGE

SYMPAZAN[®] is indicated for the adjunctive treatment of seizures associated with Lennox-Gastaut Syndrome (LGS) in patients 2 years of age or older.

2 DOSAGE AND ADMINISTRATION

2.1 Dosing Information

A daily dose of SYMPAZAN[®] greater than 5 mg should be administered in divided doses twice daily; a 5 mg daily dose can be administered as a single dose. Dose patients according to body weight. Individualize dosing within each body weight group, based on clinical efficacy and tolerability. Each dose in Table 1 (e.g., 5 to 20 mg in 30 kg or less weight group) has been shown to be effective, although effectiveness increases with increasing dose [see *Clinical Studies (14)*]. Do not proceed with dose escalation more rapidly than weekly, because serum concentrations of clobazam and its active metabolite require 5 and 9 days, respectively, to reach steady-state.

Table 1: Recommended Total Daily Dosing by Weight Group

	30 kg or Less Body Weight	Greater than 30 kg Body Weight

Starting Dose	5 mg	10 mg
Starting Day 7	10 mg	20 mg
Starting Day 14	20 mg	40 mg

2.2 Discontinuation or Dosage Reduction of SYMPAZAN

To reduce the risk of withdrawal reactions, increased seizure frequency, and status epilepticus, use a gradual taper to discontinue SYMPAZAN or reduce the dosage. Taper by decreasing the total daily dosage by 5-10 mg/day on a weekly basis until discontinued. If a patient develops withdrawal reactions, consider pausing the taper or increasing the dosage to the previous tapered dosage level. Subsequently decrease the dosage more slowly [see *Warnings and Precautions (5.3) and Drug Abuse and Dependence (9.3)*].

2.3 Important Administration Instructions

Instruct patients and/or caregivers to read the “Instructions for Use” carefully for complete directions on how to properly dose and administer SYMPAZAN® oral films.

Apply SYMPAZAN® on top of the tongue where it adheres and dissolves.

SYMPAZAN® oral film can be taken with or without food [see *Clinical Pharmacology (12.3)*]. Do not administer with liquids. As the film dissolves, saliva should be swallowed in a normal manner, but the patient should refrain from chewing, spitting or talking.

Only one oral film should be taken at a time; if a second film is needed to complete the dosage, it should not be taken until the first film has completely dissolved.

2.4 Dosage Adjustments in Geriatric Patients

Plasma concentrations at any given dose are generally higher in geriatric patients [see *Clinical Pharmacology (12.3)*]. Therefore, the starting dosage should generally be 5 mg/day for all geriatric patients. Then proceed slowly with dose escalation; titrate according to weight, but to half the dosage presented in Table 1, as tolerated. If necessary and based upon clinical response, an additional titration to the maximum dosage (20 mg/day or 40 mg/day, depending on weight) may be started on day 21 [see *Use in Specific Populations (8.5)*].

2.5 Dosage Adjustments in CYP2C19 Poor Metabolizers

In CYP2C19 poor metabolizers, levels of N-desmethylclobazam, clobazam's active metabolite, will be increased [see *Clinical Pharmacology (12.4)*]. Therefore, the starting dosage should be 5 mg/day in patients known to be CYP2C19 poor metabolizers. Then proceed slowly with dose escalation; titrate according to weight, but to half the dosage presented in Table 1, as tolerated. If necessary and based upon clinical response, an additional titration to the maximum dosage (20 mg/day or 40 mg/day, depending on weight) may be started on day 21 [see *Use in Specific Populations (8.6)*].

2.6 Dosage Adjustments in Patients with Hepatic Impairment

SYMPAZAN[®] is hepatically metabolized; however, there are limited data to characterize the effect of hepatic impairment on the pharmacokinetics of SYMPAZAN[®]. For patients with mild to moderate hepatic impairment (Child-Pugh score 5-9), the starting dosage should be 5 mg/day (regardless of weight). Then proceed slowly with dosing escalations; titrate patients according to weight, but to half the dosage presented in Table 1, as tolerated. If necessary and based upon clinical response, an additional titration to the maximum dosage (20 mg/day or 40 mg/day, depending on weight) may be started on day 21. There is inadequate information about metabolism of clobazam in patients with severe hepatic impairment. Therefore, no dosing recommendation can be given for those patients [*see Use in Specific Populations (8.8), Clinical Pharmacology (12.3)*].

3 DOSAGE FORMS AND STRENGTHS

SYMPAZAN[®] Oral Film: Thin, white, rectangular, orally dissolving film strips:

- 5 mg imprinted with C5
- 10 mg imprinted with C10
- 20 mg imprinted with C20

4 CONTRAINDICATIONS

SYMPAZAN[®] is contraindicated in patients with a history of hypersensitivity to the drug or its ingredients. Hypersensitivity reactions have included serious dermatological reactions [*see Warnings and Precautions (5.6)*].

5 WARNINGS AND PRECAUTIONS

5.1 Risks from Concomitant Use with Opioids

Concomitant use of benzodiazepines, including SYMPAZAN[®], and opioids may result in profound sedation, respiratory depression, coma, and death. Because of these risks, reserve concomitant prescribing of benzodiazepines and opioids in patients for whom alternative treatment options are inadequate.

Observational studies have demonstrated that concomitant use of opioid analgesics and benzodiazepines increases the risk of drug-related mortality compared to use of opioids alone. If a decision is made to prescribe SYMPAZAN[®] concomitantly with opioids, prescribe the lowest effective dosages and minimum durations of concomitant use, and follow patients closely for signs and symptoms of respiratory depression and sedation. Advise both patients and caregivers about the risks of respiratory depression and sedation when SYMPAZAN[®] is used with opioids [*see Drug Interactions (7.1)*].

5.2 Abuse, Misuse, and Addiction

The use of benzodiazepines, including SYMPAZAN, exposes users to the risks of abuse, misuse, and addiction, which can lead to overdose or death. Abuse and misuse of benzodiazepines often (but not always) involve the use of doses greater than the maximum recommended dosage and commonly involve concomitant use of other

medications, alcohol, and/or illicit substances, which is associated with an increased frequency of serious adverse outcomes, including respiratory depression, overdose, or death [see *Drug Abuse and Dependence (9.2)*].

Before prescribing SYMPAZAN and throughout treatment, assess each patient's risk for abuse, misuse, and addiction (e.g., using a standardized screening tool). Use of SYMPAZAN, particularly in patients at elevated risk, necessitates counseling about the risks and proper use of SYMPAZAN along with monitoring for signs and symptoms of abuse, misuse, and addiction. Prescribe the lowest effective dosage; avoid or minimize concomitant use of CNS depressants and other substances associated with abuse, misuse, and addiction (e.g., opioid analgesics, stimulants); and advise patients on the proper disposal of unused drug. If a substance use disorder is suspected, evaluate the patient and institute (or refer them for) early treatment, as appropriate.

5.3 Dependence and Withdrawal Reactions

To reduce the risk of withdrawal reactions, use a gradual taper to discontinue SYMPAZAN or reduce the dosage [see *Dosage and Administration (2.2)*].

Patients at an increased risk of withdrawal adverse reactions after benzodiazepine discontinuation or rapid dosage reduction include those who take higher dosages, and those who have had longer durations of use.

Acute Withdrawal Reactions

The continued use of benzodiazepines, including SYMPAZAN, may lead to clinically significant physical dependence. Abrupt discontinuation or rapid dosage reduction of SYMPAZAN after continued use, or administration of flumazenil (a benzodiazepine antagonist) may precipitate acute withdrawal reactions, which can be life-threatening (e.g., seizures) [see *Drug Abuse and Dependence (9.3)*].

Protracted Withdrawal Syndrome

In some cases, benzodiazepine users have developed a protracted withdrawal syndrome with withdrawal symptoms lasting weeks to more than 12 months [see *Drug Abuse and Dependence (9.3)*].

5.4 Potentiation of Sedation from Concomitant Use with Central Nervous System Depressants

Since SYMPAZAN® has a central nervous system (CNS) depressant effect, patients or their caregivers should be cautioned against simultaneous use with other CNS depressant drugs or alcohol, and cautioned that the effects of other CNS depressant drugs or alcohol may be potentiated [see *Drug Interactions (7.2)*].

5.5 Somnolence or Sedation

SYMPAZAN® causes somnolence and sedation. In clinical trials, somnolence or sedation was reported at all effective doses and was dose-related [see *Adverse Reactions (6.1)*].

In general, somnolence and sedation begin within the first month of treatment and may diminish with continued treatment. Prescribers should monitor patients for somnolence and sedation, particularly with concomitant use of other central nervous system depressants. Prescribers should caution patients against engaging in hazardous activities requiring mental alertness, such as operating dangerous machinery or motor vehicles, until the effect of SYMPAZAN® is known.

5.6 Serious Dermatological Reactions

Serious skin reactions, including Stevens-Johnson Syndrome (SJS) and toxic epidermal necrolysis (TEN), have been reported with clobazam in both children and adults during the post-marketing period. Patients should be closely monitored for signs or symptoms of SJS/TEN, especially during the first 8 weeks of treatment initiation or when re-introducing therapy. SYMPAZAN® should be discontinued at the first sign of rash, unless the rash is clearly not drug-related. If signs or symptoms suggest SJS/TEN, use of this drug should not be resumed and alternative therapy should be considered [see *Contraindications (4)*].

5.7 Suicidal Behavior and Ideation

Antiepileptic drugs (AEDs), including SYMPAZAN®, increase the risk of suicidal thoughts or behavior in patients taking these drugs for any indication. Patients treated with any AED for any indication should be monitored for the emergence or worsening of depression, suicidal thoughts or behavior, and/or any unusual changes in mood or behavior.

Pooled analyses of 199 placebo-controlled clinical trials (mono- and adjunctive therapy) of 11 different AEDs showed that patients randomized to one of the AEDs had approximately twice the risk (adjusted relative risk 1.8, 95% confidence interval [CI]: 1.2, 2.7) of suicidal thinking or behavior compared to patients randomized to placebo. In these trials, which had a median treatment duration of 12 weeks, the estimated incidence rate of suicidal behavior or ideation among 27,863 AED-treated patients was 0.43%, compared to 0.24% among 16,029 placebo-treated patients, representing an increase of approximately one case of suicidal thinking or behavior for every 530 patients treated. There were four suicides in drug-treated patients in the trials and none in placebo-treated patients, but the number is too small to allow any conclusion about drug effect on suicide.

The increased risk of suicidal thoughts or behavior with AEDs was observed as early as one week after starting drug treatment with AEDs and persisted for the duration of treatment assessed. Because most trials included in the analysis did not extend beyond 24 weeks, the risk of suicidal thoughts or behavior beyond 24 weeks could not be assessed.

The risk of suicidal thoughts or behavior was generally consistent among drugs in the data analyzed. The finding of increased risk with AEDs of varying mechanisms of action and across a range of indications suggests that the risk applies to all AEDs used for any indication. The risk did not vary substantially by age (5-100 years) in the clinical trials analyzed. Table 2 shows absolute and relative risk by indication for all evaluated AEDs.

Table 2: Risk by Indication for Antiepileptic Drugs in the Pooled Analysis

Indication	Placebo Patients with Events per 1000 Patients	Drug Patients with Events per 1000 Patients	Relative Risk: Incidence of Drug Events in Drug Patients/Incidence in Placebo Patients	Risk Difference: Additional Drug Patients with Events per 1000 Patients
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Epilepsy	1.0	3.4	3.5	2.4
Psychiatric	5.7	8.5	1.5	2.9
Other	1.0	1.8	1.9	0.9
Total	2.4	4.3	1.8	1.9

The relative risk for suicidal thoughts or behavior was higher in clinical trials for epilepsy than in clinical trials for psychiatric or other conditions, but the absolute risk differences were similar for the epilepsy and psychiatric indications.

Anyone considering prescribing SYMPAZAN® or any other AED must balance the risk of suicidal thoughts or behavior with the risk of untreated illness. Epilepsy and many other illnesses for which AEDs are prescribed are themselves associated with morbidity and mortality and an increased risk of suicidal thoughts and behavior. Should suicidal thoughts and behavior emerge during treatment, the prescriber needs to consider whether the emergence of these symptoms in any given patient may be related to the illness being treated.

6 ADVERSE REACTIONS

Clinically significant adverse reactions that appear in other sections of the labeling include the following:

- Risks from Concomitant Use with Opioids [*see Warnings and Precautions (5.1)*]
- Abuse, Misuse, and Addiction [*see Warnings and Precautions (5.2)*]
- Dependence and Withdrawal Reactions [*see Warnings and Precautions (5.3)*]
- Potentiation of Sedation from Concomitant Use with Central Nervous System Depressants [*see Warnings and Precautions (5.4)*]
- Somnolence or Sedation [*see Warnings and Precautions (5.5)*]
- Serious Dermatological Reactions [*see Contraindications (4), Warnings and Precautions (5.6)*]
- Suicidal Behavior and Ideation [*see Warnings and Precautions (5.7)*]

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. The following adverse events have been reported in clinical trials of patients treated with clobazam, the active ingredient of SYMPAZAN®.

During its development for the adjunctive treatment of seizures associated with LGS, clobazam was administered to 333 healthy volunteers and 300 patients with a current or prior diagnosis of LGS, including 197 patients treated for 12 months or more. The conditions and duration of exposure varied greatly and included single- and multiple-dose clinical pharmacology studies in healthy volunteers and two double-blind studies in patients with LGS

(Study 1 and 2) [see *Clinical Studies (14)*]. Only Study 1 included a placebo group, allowing comparison of adverse reaction rates on clobazam at several doses to placebo.

Adverse Reactions Leading to Discontinuation in an LGS Placebo Controlled Clinical Trial (Study 1)

The adverse reactions associated with clobazam treatment discontinuation in $\geq 1\%$ of patients in decreasing order of frequency included lethargy, somnolence, ataxia, aggression, fatigue, and insomnia.

Most Common Adverse Reactions in an LGS Placebo Controlled Clinical Trial (Study 1)

Table 3 lists the adverse reactions that occurred in $\geq 5\%$ of clobazam-treated patients (at any dose), and at a rate greater than placebo-treated patients, in the randomized, double-blind, placebo-controlled, parallel group clinical study of adjunctive AED therapy for 15 weeks (Study 1).

Table 3: Adverse Reactions Reported for $\geq 5\%$ of Patients and More Frequently than Placebo in Any Treatment Group					
	Placebo N=59 %	Clobazam Dose Level			All Clobazam N=179 %
		Low^a N=58 %	Medium^b N=62 %	High^c N=59 %	
Gastrointestinal Disorders					
Vomiting	5	9	5	7	7
Constipation	0	2	2	10	5
Dysphagia	0	0	0	5	2
General Disorders and Administration Site Conditions					
Pyrexia	3	17	10	12	13
Irritability	5	3	11	5	7
Fatigue	2	5	5	3	5
Infections and Infestations					
Upper respiratory tract infection	10	10	13	14	12
Pneumonia	2	3	3	7	4
Urinary tract infection	0	2	5	5	4
Bronchitis	0	2	0	5	2
Metabolism and Nutrition Disorders					
Decreased appetite	3	3	0	7	3
Increased appetite	0	2	3	5	3
Nervous System Disorders					
Somnolence or Sedation	15	17	27	32	26

Table 3: Adverse Reactions Reported for $\geq 5\%$ of Patients and More Frequently than Placebo in Any Treatment Group					
	Placebo N=59 %	Clobazam Dose Level			All Clobazam N=179 %
		Low^a N=58 %	Medium^b N=62 %	High^c N=59 %	
Somnolence	12	16	24	25	22
Sedation	3	2	3	9	5
Lethargy	5	10	5	15	10
Drooling	3	0	13	14	9
Ataxia	3	3	2	10	5
Psychomotor hyperactivity	3	3	3	5	4
Dysarthria	0	2	2	5	3
Psychiatric Disorders					
Aggression	5	3	8	14	8
Insomnia	2	2	5	7	5
Respiratory Disorders					
Cough	0	3	5	7	5

^a Maximum daily dose of 5 mg for ≤ 30 kg body weight; 10 mg for >30 kg body weight

^b Maximum daily dose of 10 mg for ≤ 30 kg body weight; 20 mg for >30 kg body weight

^c Maximum daily dose of 20 mg for ≤ 30 kg body weight; 40 mg for >30 kg body weight

6.2 Postmarketing Experience

The following adverse reactions have been identified during post-approval use of clobazam tablets. These reactions are reported voluntarily from a population of uncertain size; therefore, it is not possible to estimate their frequency or establish a causal relationship to drug exposure. Adverse reactions are categorized by system organ class.

Blood Disorders: Anemia, eosinophilia, leukopenia, thrombocytopenia

Eye Disorders: Diplopia, vision blurred

Gastrointestinal Disorders: Abdominal distention

General Disorders and Administration Site Conditions: Hypothermia

Investigations: Hepatic enzyme increased

Musculoskeletal: Muscle spasms

Psychiatric Disorders: Agitation, anxiety, apathy, confusional state, depression, delirium, delusion, hallucination

Renal and Urinary Disorders: Urinary retention

Respiratory Disorders: Aspiration, respiratory depression

Skin and Subcutaneous Tissue Disorders: Rash, urticaria, angioedema, and facial and lip edema

7 DRUG INTERACTIONS

7.1 Opioids

The concomitant use of benzodiazepines and opioids increases the risk of respiratory depression because of actions at different receptor sites in the CNS that control respiration. Benzodiazepines interact at GABA_A sites, and opioids interact primarily at mu receptors. When benzodiazepines and opioids are combined, the potential for benzodiazepines to significantly worsen opioid-related respiratory depression exists. Limit dosage and duration of concomitant use of benzodiazepines and opioids, and follow patients closely for respiratory depression and sedation [*see Warnings and Precautions (5.1)*].

7.2 CNS Depressants and Alcohol

Concomitant use of SYMPAZAN[®] with other CNS depressants may increase the risk of sedation and somnolence [*see Warnings and Precautions (5.4)*].

Alcohol, as a CNS depressant, will interact with SYMPAZAN[®] in a similar way and also increases clobazam's maximum plasma exposure by approximately 50%. Therefore, caution patients or their caregivers against simultaneous use with other CNS depressant drugs or alcohol, and caution that the effects of other CNS depressant drugs or alcohol may be potentiated [*see Warnings and Precautions (5.4)*].

7.3 Effect of SYMPAZAN[®] on Other Drugs

Hormonal Contraceptives

SYMPAZAN[®] is a weak CYP3A4 inducer. As some hormonal contraceptives are metabolized by CYP3A4, their effectiveness may be diminished when given with SYMPAZAN[®]. Additional non-hormonal forms of contraception are recommended when using SYMPAZAN[®] [*see Clinical Pharmacology (12.3), Patient Counseling Information (17)*].

Drugs Metabolized by CYP2D6

SYMPAZAN[®] inhibits CYP2D6. Dose adjustment of drugs metabolized by CYP2D6 may be necessary [*see Clinical Pharmacology (12.3)*].

7.4 Effect of Other Drugs on SYMPAZAN[®]

Strong and Moderate Inhibitors of CYP2C19

Coadministration with strong or moderate inhibitors of CYP2C19 may result in increased exposure to N-desmethylclobazam, the active metabolite of clobazam. This may increase the risk of dose-related adverse reactions. Dosage adjustment of SYMPAZAN[®] may be necessary when co-administered with strong CYP2C19 inhibitors (e.g., fluconazole, fluvoxamine, ticlopidine) or moderate CYP2C19 inhibitors (e.g., omeprazole) [*see Clinical Pharmacology (12.3)*].

Effect of Cannabidiol on SYMPAZAN[®]

Coadministration of cannabidiol, a CYP3A4 and CYP2C19 substrate and a CYP2C19 inhibitor, with clobazam may increase the risk of clobazam-related adverse reactions [*see Warnings and Precautions (5.4, 5.5), Clinical Pharmacology (12.3)*]. Consider a reduction in dosage of cannabidiol or clobazam if adverse reactions known to occur with SYMPAZAN are experienced.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Pregnancy Exposure Registry

There is a pregnancy exposure registry that monitors pregnancy outcomes in women exposed to AEDs, such as SYMPAZAN[®], during pregnancy. Physicians are advised to recommend that pregnant patients taking SYMPAZAN[®] enroll in the North American Antiepileptic Drug (NAAED) Pregnancy Registry. This can be done by calling the toll-free number 1-888-233-2334 and must be done by patients themselves. Information on the registry can also be found at the website <http://www.aedpregnancyregistry.org/>.

Risk Summary

There are no adequate and well-controlled studies of SYMPAZAN[®] in pregnant women. Available data suggest that the class of benzodiazepines is not associated with marked increases in risk for congenital anomalies. Although some early epidemiological studies suggested a relationship between benzodiazepine drug use in pregnancy and congenital anomalies such as cleft lip and/or palate, these studies had considerable limitations. More recently completed studies of benzodiazepine use in pregnancy have not consistently documented elevated risks for specific congenital anomalies. There is insufficient evidence to assess the effect of benzodiazepine pregnancy exposure on neurodevelopment. There are clinical considerations regarding exposure to benzodiazepines during the second and third trimester of pregnancy or immediately prior to or during childbirth. These risks include decreased fetal movement and/or fetal heart rate variability, “floppy infant syndrome,” dependence, and withdrawal [*see Clinical Considerations and Human Data*]. Administration of clobazam to pregnant rats and rabbits during the period of organogenesis or to rats throughout pregnancy and lactation resulted in developmental toxicity, including increased incidences of fetal malformations and mortality, at plasma exposures for clobazam and its major active metabolite, N-desmethyloclobazam, below those expected at therapeutic doses in patients [*see Animal Data*].

Data for other benzodiazepines suggest the possibility of long-term effects on neurobehavioral and immunological function in animals following prenatal exposure to benzodiazepines at clinically relevant doses.

SYMPAZAN[®] should be used during pregnancy only if the potential benefit to the mother justifies the potential risk to the fetus.

Advise pregnant women and women of childbearing age of the potential risk to a fetus.

In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2%-4% and 15% -20%, respectively. The background risk of major birth defects and miscarriage for the indicated population is unknown.

Clinical Considerations

Fetal/Neonatal Adverse Reactions

Infants born to mothers who have taken benzodiazepines during the later stages of pregnancy can develop dependence, and subsequently withdrawal, during the postnatal period. Clinical manifestations of withdrawal or neonatal abstinence syndrome may include hypertonia, hyperreflexia, hypoventilation, irritability, tremors,

diarrhea, and vomiting. These complications can appear shortly after delivery to 3 weeks after birth and persist from hours to several months depending on the degree of dependence and the pharmacokinetic profile of the benzodiazepine. Symptoms may be mild and transient or severe. Standard management for neonatal withdrawal syndrome has not yet been defined. Observe newborns who are exposed to SYMPAZAN® *in utero* during the later stages of pregnancy for symptoms of withdrawal and manage accordingly.

Labor and Delivery

Administration of benzodiazepines immediately prior to or during childbirth can result in a floppy infant syndrome, which is characterized by lethargy, hypothermia, hypotonia, respiratory depression, and difficulty feeding. Floppy infant syndrome occurs mainly within the first hours after birth and may last up to 14 days. Observe exposed newborns for these symptoms and manage accordingly.

Data

Human Data

Congenital Anomalies

Although there are no adequate and well controlled studies of SYMPAZAN® in pregnant women, there is information about benzodiazepines as a class. Dolovich et al. published a meta-analysis of 23 studies that examined the effects of benzodiazepine exposure during the first trimester of pregnancy. Eleven of the 23 studies included in the meta-analysis considered the use of chlordiazepoxide and diazepam and not other benzodiazepines. The authors considered case-control and cohort studies separately. The data from the cohort studies did not suggest an increased risk for major malformations (OR 0.90; 95% CI 0.61-1.35) or for oral cleft (OR 1.19; 95% CI 0.34 - 4.15). The data from the case control studies suggested an association between benzodiazepines and major malformations (OR 3.01, 95% CI 1.32 6.84) and oral cleft (OR 1.79; 95% CI 1.13 -2.82). The limitations of this meta-analysis included the small number of reports included in the analysis, and that most cases for analyses of both oral cleft and major malformations came from only three studies. A follow up to that meta-analysis included 3 new cohort studies that examined risk for major malformations and one study that considered cardiac malformations. The authors found no new studies with an outcome of oral clefts. After the addition of the new studies, the odds ratio for major malformations with first trimester exposure to benzodiazepines was 1.07 (95% CI 0.91-1.25).

Neonatal Withdrawal and Floppy Infant Syndrome

Neonatal withdrawal syndrome and symptoms suggestive of floppy infant syndrome associated with administration of clobazam during the later stages of pregnancy and peripartum period have been reported in the postmarketing experience. Findings in published scientific literature suggest that the major neonatal side effects of benzodiazepines include sedation and dependence with withdrawal signs. Data from observational studies suggest that fetal exposure to benzodiazepines is associated with the neonatal adverse events of hypotonia, respiratory problems, hypoventilation, low Apgar score, and neonatal withdrawal syndrome.

Animal Data

In a study in which clobazam (0, 150, 450, or 750 mg/kg/day) was orally administered to pregnant rats throughout the period of organogenesis, embryofetal mortality and incidences of fetal skeletal variations were increased at all doses. The low-effect dose for embryofetal developmental toxicity in rats (150 mg/kg/day) was associated with

plasma exposures (AUC) for clobazam and its major active metabolite, N-desmethyloclobazam, lower than those in humans at the maximum recommended human dose (MRHD) of 40 mg/day.

Oral administration of clobazam (0, 10, 30, or 75 mg/kg/day) to pregnant rabbits throughout the period of organogenesis resulted in decreased fetal body weights, and increased incidences of fetal malformations (visceral and skeletal) at the mid and high doses, and an increase in embryofetal mortality at the high dose. Incidences of fetal variations were increased at all doses. The highest dose tested was associated with maternal toxicity (ataxia and decreased activity). The low effect dose for embryofetal developmental toxicity in rabbits (10 mg/kg/day) was associated with plasma exposures for clobazam and N-desmethyloclobazam lower than those in humans at the MRHD.

Oral administration of clobazam (0, 50, 350, or 750 mg/kg/day) to rats throughout pregnancy and lactation resulted in increased embryofetal mortality at the high dose, decreased pup survival at the mid and high doses and alterations in offspring behavior (locomotor activity) at all doses. The low-effect dose for adverse effects on pre- and postnatal development in rats (50 mg/kg/day) was associated with plasma exposures for clobazam and N-desmethyloclobazam lower than those in humans at the MRHD.

8.2 Lactation

Risk Summary

SYMPAZAN[®] is excreted in human milk. Postmarketing experience suggests that breastfed infants of mothers taking benzodiazepines, such as SYMPAZAN[®], may have effects of lethargy, somnolence and poor sucking. The effect of SYMPAZAN[®] on milk production is unknown. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for SYMPAZAN[®] and any potential adverse effects on the breastfed infant from SYMPAZAN[®] or from the underlying maternal condition. If exposing a breastfed infant to SYMPAZAN[®], observe for any potential adverse effects.

Clinical Considerations

Monitoring for Adverse Reactions

Adverse reactions such as somnolence and difficulty feeding have been reported in infants during breastfeeding in postmarketing experience with clobazam. Monitor breastfed infants for possible sedation and poor sucking. Data in scientific literature on clobazam use during lactation is limited. After short-term administration, clobazam and N-desmethyloclobazam are transferred into breast milk.

8.3 Females and Males of Reproductive Potential

Administration of clobazam to rats prior to and during mating and early gestation resulted in adverse effects on fertility and early embryonic development at plasma exposures for clobazam and its major active metabolite, N-desmethyloclobazam, below those in humans at the MRHD [*see Nonclinical Toxicology (13.1)*].

8.4 Pediatric Use

Safety and effectiveness for the adjunctive treatment of seizures associated with Lennox-Gastaut syndrome in pediatric patients 2 years of age and older have been established in two adequate and well-controlled studies [see *Clinical Studies (14)*].

Safety and effectiveness in patients less than 2 years of age have not been established.

Juvenile Animal Data

In a study in which clobazam (0, 4, 36, or 120 mg/kg/day) was orally administered to rats during the juvenile period of development (postnatal days 14 to 48), adverse effects on growth (decreased bone density and bone length) and behavior (altered motor activity and auditory startle response; learning deficit) were observed at the high dose. The effect on bone density, but not on behavior, was reversible when drug was discontinued. The no-effect level for juvenile toxicity (36 mg/kg/day) was associated with plasma exposures (AUC) to clobazam and its major active metabolite, N-desmethyloclobazam, less than those expected at therapeutic doses in pediatric patients.

8.5 Geriatric Use

Clinical studies of clobazam did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. However, elderly subjects appear to eliminate clobazam more slowly than younger subjects based on population pharmacokinetic analysis. For these reasons, dosage modification is recommended [see *Dosage and Administration (2.4)*, *Clinical Pharmacology (12.3)*].

8.6 CYP2C19 Poor Metabolizers

Concentrations of clobazam's active metabolite, N-desmethyloclobazam, are higher in CYP2C19 poor metabolizers than in extensive metabolizers. For this reason, dosage modification is recommended [see *Dosage and Administration (2.5)*, *Clinical Pharmacology (12.3)*].

8.7 Renal Impairment

The pharmacokinetics of clobazam were evaluated in patients with mild and moderate renal impairment. There were no significant differences in systemic exposure (AUC and C_{max}) between patients with mild or moderate renal impairment and healthy subjects. No dose adjustment is required for patients with mild and moderate renal impairment. There is essentially no experience with SYMPAZAN[®] in patients with severe renal impairment or ESRD. It is not known if clobazam or its active metabolite, N-desmethyl-clobazam, is dialyzable [see *Clinical Pharmacology (12.3)*].

8.8 Hepatic Impairment

SYMPAZAN[®] is hepatically metabolized; however, there are limited data to characterize the effect of hepatic impairment on the pharmacokinetics of clobazam. For this reason, dosage adjustment is recommended in patients with mild to moderate hepatic impairment (Child-Pugh score 5-9) [see *Dosage and Administration (2.6)*]. There is inadequate information about metabolism of SYMPAZAN[®] in patients with severe hepatic impairment [see *Clinical Pharmacology (12.3)*].

9 DRUG ABUSE AND DEPENDENCE

9.1 Controlled Substance

SYMPAZAN® contains clobazam, a Schedule IV controlled substance.

9.2 Abuse

SYMPAZAN is a benzodiazepine and a CNS depressant with a potential for abuse and addiction. Abuse is the intentional, non-therapeutic use of a drug, even once, for its desirable psychological or physiological effects. Misuse is the intentional use, for therapeutic purposes, of a drug by an individual in a way other than prescribed by a health care provider or for whom it was not prescribed. Drug addiction is a cluster of behavioral, cognitive, and physiological phenomena that may include a strong desire to take the drug, difficulties in controlling drug use (e.g., continuing drug use despite harmful consequences, giving a higher priority to drug use than other activities and obligations), and possible tolerance or physical dependence. Even taking benzodiazepines as prescribed may put patients at risk for abuse and misuse of their medication. Abuse and misuse of benzodiazepines may lead to addiction.

Abuse and misuse of benzodiazepines often (but not always) involve the use of doses greater than the maximum recommended dosage and commonly involve concomitant use of other medications, alcohol, and/or illicit substances, which is associated with an increased frequency of serious adverse outcomes, including respiratory depression, overdose, or death. Benzodiazepines are often sought by individuals who abuse drugs and other substances, and by individuals with addictive disorders [*see Warnings and Precautions (5.2)*].

The following adverse reactions have occurred with benzodiazepine abuse and/or misuse: abdominal pain, amnesia, anorexia, anxiety, aggression, ataxia, blurred vision, confusion, depression, disinhibition, disorientation, dizziness, euphoria, impaired concentration and memory, indigestion, irritability, muscle pain, slurred speech, tremors, and vertigo.

The following severe adverse reactions have occurred with benzodiazepine abuse and/or misuse: delirium, paranoia, suicidal ideation and behavior, seizures, coma, breathing difficulty, and death. Death is more often associated with polysubstance use (especially benzodiazepines with other CNS depressants such as opioids and alcohol). The World Health Organization epidemiology database contains reports of drug abuse, misuse, and overdoses associated with clobazam.

9.3 Dependence

Physical Dependence

SYMPAZAN may produce physical dependence from continued therapy. Physical dependence is a state that develops as a result of physiological adaptation in response to repeated drug use, manifested by withdrawal signs and symptoms after abrupt discontinuation or a significant dose reduction of a drug. Abrupt discontinuation or rapid dosage reduction of benzodiazepines or administration of flumazenil, a benzodiazepine antagonist, may precipitate acute withdrawal reactions, including seizures, which can be life-threatening. Patients at an increased risk of withdrawal adverse reactions after benzodiazepine discontinuation or rapid dosage reduction include those who take higher dosages (i.e., higher and/or more frequent doses) and those who have had longer durations of use [*see Warnings and Precautions (5.3)*].

To reduce the risk of withdrawal reactions, use a gradual taper to discontinue SYMPAZAN or reduce the dosage [see *Dosage and Administration (2.2)* and *Warnings and Precautions (5.3)*].

Acute Withdrawal Signs and Symptoms

Acute withdrawal signs and symptoms associated with benzodiazepines have included abnormal involuntary movements, anxiety, blurred vision, depersonalization, depression, derealization, dizziness, fatigue, gastrointestinal adverse reactions (e.g., nausea, vomiting, diarrhea, weight loss, decreased appetite), headache, hyperacusis, hypertension, irritability, insomnia, memory impairment, muscle pain and stiffness, panic attacks, photophobia, restlessness, tachycardia, and tremor. More severe acute withdrawal signs and symptoms, including life-threatening reactions, have included catatonia, convulsions, delirium tremens, depression, hallucinations, mania, psychosis, seizures, and suicidality.

Protracted Withdrawal Syndrome

Protracted withdrawal syndrome associated with benzodiazepines is characterized by anxiety, cognitive impairment, depression, insomnia, formication, motor symptoms (e.g., weakness, tremor, muscle twitches), paresthesia, and tinnitus that persists beyond 4 to 6 weeks after initial benzodiazepine withdrawal. Protracted withdrawal symptoms may last weeks to more than 12 months. As a result, there may be difficulty in differentiating withdrawal symptoms from potential re-emergence or continuation of symptoms for which the benzodiazepine was being used.

Tolerance

Tolerance to SYMPAZAN may develop from continued therapy. Tolerance is a physiological state characterized by a reduced response to a drug after repeated administration (i.e., a higher dose of a drug is required to produce the same effect that was once obtained at a lower dose). Tolerance to the therapeutic effect of SYMPAZAN may develop; however, little tolerance develops to the amnesic reactions and other cognitive impairments caused by benzodiazepines.

10 OVERDOSAGE

10.1 Signs and Symptoms of Overdosage

Overdose and intoxication with benzodiazepines, including SYMPAZAN[®], may lead to CNS depression, associated with drowsiness, confusion and lethargy, possibly progressing to ataxia, respiratory depression, hypotension, and, rarely, coma or death. The risk of a fatal outcome is increased in cases of combined poisoning with other CNS depressants, including opioid and alcohol.

10.2 Management of Overdosage

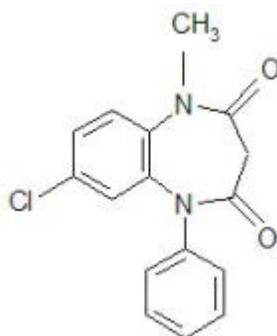
The management of SYMPAZAN[®] overdose may include gastric lavage and/or administration of activated charcoal, intravenous fluid replenishment, early control of airway and general supportive measures, in addition to monitoring level of consciousness and vital signs. Hypotension can be treated by replenishment with plasma substitutes and, if necessary, with sympathomimetic agents.

The efficacy of supplementary administration of physostigmine (a cholinergic agent) or of flumazenil (a benzodiazepine antagonist) in clobazam overdose has not been assessed. The administration of flumazenil in

cases of benzodiazepine overdose can lead to withdrawal and adverse reactions. Its use in patients with epilepsy is typically not recommended.

11 DESCRIPTION

SYMPAZAN® contains clobazam, a benzodiazepine derivative, which is chemically known as 7-Chloro-1-methyl-5-phenyl-1*H*-1,5 benzodiazepine-2,4(3*H*,5*H*)-dione with a molecular formula of C₁₆H₁₃ClN₂O₂, molecular weight of 300.74, and it has the following structural formula:



Clobazam is a white or almost white, crystalline powder with a slightly bitter taste. It is slightly soluble in water and sparingly soluble in ethanol.

Each SYMPAZAN® Oral Film contains 5 mg, 10 mg or 20 mg of clobazam and the following inactive ingredients: artificial cooling flavor, citric acid, glycerol monooleate, hypromellose, maltitol, natural and artificial bitter masker, natural raspberry type flavor, polyethylene oxide, purified water, sodium phosphate dibasic, and sucralose.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

The exact mechanism of action for clobazam, a 1,5-benzodiazepine, is not fully understood but is thought to involve potentiation of GABAergic neurotransmission resulting from binding at the benzodiazepine site of the GABA_A receptor.

12.2 Pharmacodynamics

Effects on Electrocardiogram

The effect of clobazam 20 mg and 80 mg administered twice daily on QTc interval was evaluated in a randomized, evaluator-blinded, placebo-, and active-controlled (moxifloxacin 400 mg) parallel thorough QT study in 280 healthy subjects. In a study with demonstrated ability to detect small effects, the upper bound of the one-sided 95% confidence interval for the largest placebo adjusted, baseline-corrected QTc based on the Fridericia correction method was below 10 ms, the threshold for regulatory concern. Thus, at a dose two times the maximum recommended dose, clobazam did not prolong the QTc interval to any clinically relevant extent.

12.3 Pharmacokinetics

SYMPAZAN[®] Oral Films at single doses of 10 mg and 20 mg clobazam have been shown to be bioequivalent (C_{max} and AUC) to clobazam tablets at equivalent doses. Following single-dose administration of SYMPAZAN[®], peak plasma levels (C_{max}) and the area under the curve (AUC) of clobazam are dose-proportional over the dose range of 10-20 mg. Based on a population pharmacokinetic analysis with clobazam tablets, the pharmacokinetics of clobazam are linear from 5-160 mg/day. Clobazam is converted to N-desmethyclobazam which has about 1/5 the activity of clobazam. The estimated mean elimination half-lives ($t_{1/2}$) of clobazam and N-desmethyclobazam were 36-42 hours and 71-82 hours, respectively.

Absorption

The time to peak concentrations (T_{max}) of SYMPAZAN[®] clobazam oral film under fasted conditions ranged from 0.33 to 4.0 hours after single-dose administration. The administration of clobazam tablets with food does not affect absorption. Although not studied, the oral bioavailability of SYMPAZAN[®] oral film is unlikely to be affected under fed conditions.

Distribution

Clobazam is lipophilic and distributes rapidly throughout the body. The apparent volume of distribution at steady state was approximately 100 L. The *in vitro* plasma protein binding of clobazam and N-desmethyclobazam is approximately 80-90% and 70%, respectively.

Metabolism and Excretion

Clobazam is extensively metabolized in the liver, with approximately 2% of the dose recovered in urine and 1% in feces as unchanged drug. The major metabolic pathway of clobazam involves N-demethylation, primarily by CYP3A4 and to a lesser extent by CYP2C19 and CYP2B6. N-desmethyclobazam, an active metabolite, is the major circulating metabolite in humans, and at therapeutic doses, plasma concentrations are 3-5 times higher than those of the parent compound. Based on animal and *in vitro* receptor binding data, estimates of the relative potency of N-desmethyclobazam compared to parent compound range from 1/5 to equal potency. N-desmethyclobazam is extensively metabolized, mainly by CYP2C19. N-desmethyclobazam and its metabolites comprise ~94% of the total drug-related components in urine. Following a single oral dose of radiolabeled drug, approximately 11% of the dose was excreted in the feces and approximately 82% was excreted in the urine.

The polymorphic CYP2C19 is the major contributor to the metabolism of the pharmacologically active N-desmethyclobazam [see *Clinical Pharmacology (12.4)*]. In CYP2C19 poor metabolizers, levels of N-desmethyclobazam were 5-fold higher in plasma and 2- to 3-fold higher in the urine than in CYP2C19 extensive metabolizers.

Pharmacokinetics in Specific Populations

Age

Population pharmacokinetic analyses showed that the clearance of clobazam is lower in elderly subjects compared to other age groups (ages less than 64). Dosing should be adjusted in the elderly [see *Dosage and Administration (2.4)*].

Sex

Population pharmacokinetic analyses showed no difference in the clearance of clobazam between women and men.

Race

Population pharmacokinetic analyses including Caucasian (75%), African American (15%), and Asian (9%) subjects showed that there is no evidence of clinically significant effect of race on the clearance of clobazam.

Renal Impairment

The effect of renal impairment on the pharmacokinetics of clobazam was evaluated in patients with mild (creatinine clearance [CL_{CR}] >50 to 80 mL/min; N=6) and moderate (CL_{CR} =30 to 50 mL/min; N=6) renal dysfunction, with matching healthy controls (N=6), following administration of multiple doses of clobazam 20 mg/day. There were insignificant changes in C_{max} (3-24%) and AUC (\leq 13%) for clobazam or N-desmethyloclobazam in patients with mild or moderate renal impairment compared to patients with normal renal function. Patients with severe renal impairment or ESRD were not included in this study.

Hepatic Impairment

There are limited data to characterize the effect of hepatic impairment on the pharmacokinetics of clobazam. In a small study, the pharmacokinetics of a 20 mg single oral dose of clobazam in 9 patients with liver impairment were compared to healthy controls (N=6). The C_{max} and the mean plasma clearance of clobazam, as well as the C_{max} of N-desmethyloclobazam, showed no significant change compared to the healthy controls. The AUC values of N-desmethyloclobazam in these patients were not available. Adjust dosage in patients with hepatic impairment [see *Dosage and Administration* (2.6)].

Drug Interaction Studies

In vitro studies:

Clobazam did not inhibit CYP1A2, CYP2C8, CYP2C9, CYP2C19, CYP2D6, CYP3A4, UGT1A1, UGT1A4, UGT1A6, or UGT2B4 *in vitro*. N-desmethyloclobazam showed weak inhibition of CYP2C9, UGT1A4, UGT1A6 and UGT2B4.

Clobazam and N-desmethyloclobazam did not significantly increase CYP1A2 or CYP2C19 activities, but did induce CYP3A4 activity in a concentration-dependent manner. Clobazam and N-desmethyloclobazam also increased UGT1A1 mRNA but at concentrations much higher than therapeutic levels. The potential for clobazam or N-desmethyloclobazam to induce CYP2B6 and CYP2C8 has not been evaluated.

Clobazam and N-desmethyloclobazam do not inhibit P-glycoprotein (P-gp), but are P-gp substrates.

In vivo studies:

Potential for Clobazam to Affect Other Drugs

The effect of repeated 40 mg once-daily doses of clobazam on the pharmacokinetic profiles of single-dose dextromethorphan (CYP2D6 substrate), midazolam (CYP3A4 substrate), caffeine (CYP1A2 substrate), and tolbutamide (CYP2C9 substrate), was studied when these probe substrates were given as a drug cocktail (N=18).

Clobazam increased AUC and C_{max} of dextromethorphan by 90% and 59%, respectively, reflecting its inhibition of CYP2D6 *in vivo*. Drugs metabolized by CYP2D6 may require dose adjustment when used with clobazam.

Clobazam decreased the AUC and C_{max} of midazolam by 27% and 24%, respectively, and increased the AUC and C_{max} of the metabolite 1-hydroxymidazolam by 4-fold and 2-fold, respectively. This level of induction does not call for dosage adjustment of drugs that are primarily metabolized by CYP3A4 when used concomitantly with clobazam. Some hormonal contraceptives are metabolized by CYP3A4 and their effectiveness may be diminished when given with SYMPAZAN® [see *Drug Interactions* (7.3)]. Repeated clobazam doses had no effect on caffeine and tolbutamide.

A population pharmacokinetic analysis indicated clobazam did not affect the exposure of valproic acid (a CYP2C9/2C19 substrate) or lamotrigine (a UGT substrate).

Potential for Other Drugs to Affect SYMPAZAN®

Co-administration of ketoconazole (a strong CYP3A4 inhibitor) 400 mg once-daily for 5 days increased clobazam AUC by 54%, with an insignificant effect on clobazam C_{max} . There was no significant change in AUC and C_{max} of N-desmethyloclobazam (N=18).

Strong (e.g., fluconazole, fluvoxamine, ticlopidine) and moderate (e.g., omeprazole) inhibitors of CYP2C19 may result in up to a 5-fold increase in exposure to N-desmethyloclobazam, the active metabolite of clobazam, based on extrapolation from pharmacogenomic data [see *Clinical Pharmacology* (12.4)]. Dosage adjustment of SYMPAZAN® may be necessary when co-administered with strong or moderate CYP2C19 inhibitors [see *Drug Interactions* (7.4)].

Coadministration of cannabidiol (a CYP3A4 and CYP2C19 substrate; an inhibitor of CYP2C19) produced a 3-fold increase in plasma concentrations of N-desmethyloclobazam, the active metabolite of clobazam (a substrate of CYP2C19). This may increase the risk of clobazam-related adverse reactions [see *Warnings and Precautions* (5.4, 5.5), *Drug Interactions* (7.4)].

The effects of concomitant antiepileptic drugs that are CYP3A4 inducers (phenobarbital, phenytoin, and carbamazepine), CYP2C19 inducers (valproic acid, phenobarbital, phenytoin, and carbamazepine), and CYP2C19 inhibitors (felbamate and oxcarbazepine) were evaluated using data from clinical trials. Results of population pharmacokinetic analysis show that these concomitant antiepileptic drugs did not significantly alter the pharmacokinetics of clobazam or N-desmethyloclobazam at steady-state.

Alcohol has been reported to increase the maximum plasma exposure of clobazam by approximately 50%. Alcohol may have additive CNS depressant effects when taken with SYMPAZAN® [see *Warnings and Precautions* (5.4), *Drug Interactions* (7.2)].

12.5 Pharmacogenomics

The polymorphic CYP2C19 is the main enzyme that metabolizes the pharmacologically active N-desmethyloclobazam. Compared to CYP2C19 extensive metabolizers, N-desmethyloclobazam AUC and C_{max} are approximately 3-5 times higher in poor metabolizers (e.g., subjects with *2/*2 genotype) and 2 times higher in intermediate metabolizers (e.g., subjects with *1/*2 genotype). The prevalence of CYP2C19 poor metabolism differs depending on racial/ethnic background. Dosage in patients who are known CYP2C19 poor metabolizers may need to be adjusted [see *Dosage and Administration* (2.5)].

The systemic exposure of clobazam is similar for both CYP2C19 poor and extensive metabolizers.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Carcinogenesis

In mice, oral administration of clobazam (0, 6, 12, or 24 mg/kg/day) for 2 years did not result in an increase in tumors. The highest dose tested was approximately 3 times the maximum recommended human dose (MRHD) of 40 mg/day, based on body surface area (mg/m²).

In rats, oral administration of clobazam for 2 years resulted in increases in tumors of the thyroid gland (follicular cell adenoma and carcinoma) and liver (hepatocellular adenoma) at the mid and high doses. The low dose, not

associated with an increase in tumors, was associated with plasma exposures (AUC) for clobazam and its major active metabolite, N-desmethyloclobazam, less than that in humans at the MRHD.

Mutagenesis

Clobazam and the major active metabolite, N-desmethyloclobazam, were negative for genotoxicity, based on data from a battery of *in vitro* (bacteria reverse mutation, mammalian clastogenicity) and *in vivo* (mouse micronucleus) assays.

Impairment of Fertility

In a fertility study in which clobazam (50, 350, or 750 mg/kg/day, corresponding to 12, 84, and 181 times the oral Maximum Recommended Human Dose, MRHD, of 40mg/day based on mg/m² body surface) was orally administered to male and female rats prior to and during mating and continuing in females to gestation day 6, increases in abnormal sperm and pre-implantation loss were observed at the highest dose tested. The no-effect level for fertility and early embryonic development in rats was associated with plasma exposures (AUC) for clobazam and its major active metabolite, N-desmethyloclobazam, less than those in humans at the maximum recommended human dose of 40 mg/day.

14 CLINICAL STUDIES

14.1 Demonstration of Pharmacokinetic Equivalence Between SYMPAZAN[®] and Clobazam Tablets

The efficacy of SYMPAZAN[®] is based upon bioavailability studies comparing clobazam tablets to SYMPAZAN[®] [see *Clinical Pharmacology* (12.3)].

14.2 Adjunctive Treatment of Seizures Associated with Lennox-Gastaut Syndrome (LGS)

The effectiveness of clobazam for the adjunctive treatment of seizures associated with Lennox-Gastaut Syndrome was established in two multicenter controlled studies (Study 1 and Study 2). Both studies were similar in terms of disease characteristics and concomitant AED treatments. The most common concomitant AED treatments at baseline included: valproate, lamotrigine, levetiracetam, and topiramate.

Study 1

Study 1 (N=238) was a randomized, double-blind, placebo-controlled study consisting of a 4-week baseline period followed by a 3-week titration period and 12-week maintenance period. Patients age 2-54 years with a current or prior diagnosis of LGS were stratified into 2 weight groups (12.5 kg to ≤30 kg or >30 kg) and then randomized to placebo or one of three target maintenance doses of clobazam according to [Table 4](#).

Table 4: Study 1 Total Daily Dose		
	≤30 kg Body Weight	>30 kg Body Weight
Low Dose	5 mg daily	10 mg daily

Medium Dose	10 mg daily	20 mg daily
High Dose	20 mg daily	40 mg daily

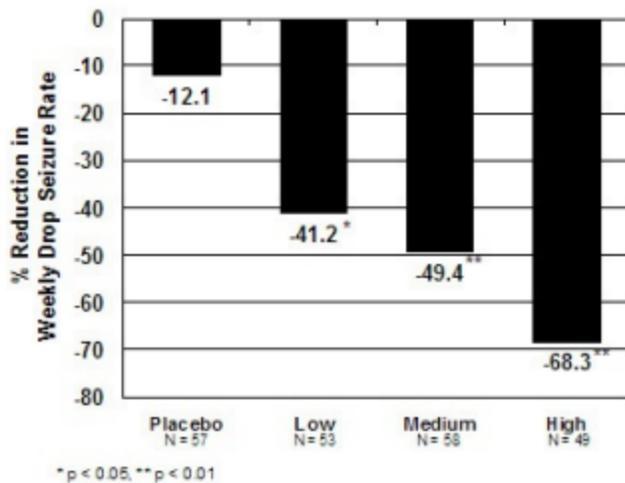
Doses above 5 mg/day were administered in two divided doses.

The primary efficacy measure was the percent reduction in the weekly frequency of drop seizures (atonic, tonic, or myoclonic), also known as drop attacks, from the 4-week baseline period to 12-week maintenance period.

The pre-dosing baseline mean weekly drop seizure frequency was 98, 100, 61, and 105 for the placebo, low-, medium-, and high-dose groups, respectively. [Figure 1](#) presents the mean percent reduction in weekly drop seizures from this baseline. All dose groups of clobazam were statistically superior ($p \leq 0.05$) to the placebo group. This effect appeared to be dose dependent.

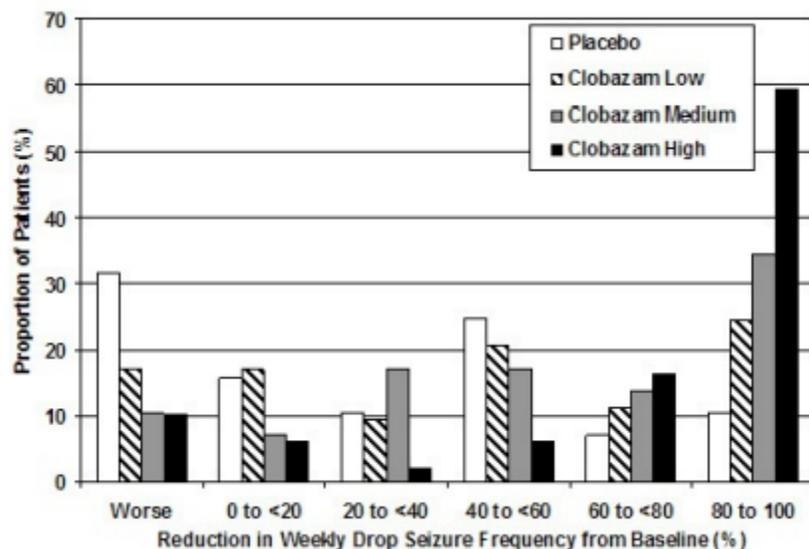
Figure 1:

Mean Percent Reduction from Baseline in Weekly Drop Seizure Frequency (Study 1)



[Figure 2](#) shows changes from baseline in weekly drop seizure frequency by category for patients treated with clobazam and placebo in Study 1. Patients in whom the seizure frequency increased are shown at left as "worse." Patients in whom the seizure frequency decreased are shown in five categories.

Figure 2: Drop Seizure Response by Category for Clobazam and Placebo (Study 1)



There was no evidence that tolerance to the therapeutic effect of clobazam developed during the 3-month maintenance period.

Study 2

Study 2 (N=68) was a randomized, double-blind comparison study of high- and low-dose clobazam, consisting of a 4-week baseline period followed by a 3-week titration period and 4-week maintenance period. Patients age 2-25 years with a current or prior diagnosis of LGS were stratified by weight, then randomized to either a low or high dose of clobazam, and then entered a 3-week titration period.

The primary efficacy measure was the percent reduction in the weekly frequency of drop seizures (atonic, tonic, or myoclonic), also known as drop attacks, from the 4-week baseline period to the 4-week maintenance period.

A statistically significantly greater reduction in seizure frequency was observed in the high-dose group compared to the low-dose group (median percent reduction of 93% vs 29%; $p < 0.05$).

16 HOW SUPPLIED/STORAGE AND HANDLING

Each SYMPAZAN[®] oral film is a white rectangular film that contains 5 mg, 10 mg or 20 mg of clobazam and printed in black ink either "C5," "C10" or "C20" on the strip according to their respective strengths and each film is packaged in a pouch (sachet).

NDC 10094-205-60: 5 mg oral film, Package of 60

NDC 10094-210-60: 10 mg oral film, Package of 60

NDC 10094-220-60: 20 mg oral film, Package of 60

Store SYMPAZAN[®] oral film pouches (sachets) at 20°C to 25°C (68°F to 77°F); Excursions permitted to 15°C to 30°C (59°F to 86°F) [See USP controlled room temperature].

17 PATIENT COUNSELING INFORMATION

Advise the patient to read the FDA-approved patient labeling (Medication Guide and Instructions for Use).

Risks from Concomitant Use with Opioids

Inform patients and caregivers that potentially fatal additive effects may occur if SYMPAZAN[®] is used with opioids and not to use such drugs concomitantly unless supervised by a healthcare provider [*see Warnings and Precautions (5.1), Drug Interactions (7.1)*].

Abuse, Misuse, and Addiction

Inform patients that the use of SYMPAZAN, even at recommended dosages, exposes users to risks of abuse, misuse, and addiction, which can lead to overdose and death, especially when used in combination with other medications (e.g., opioid analgesics), alcohol, and/or illicit substances. Inform patients about the signs and symptoms of benzodiazepine abuse, misuse, and addiction; to seek medical help if they develop these signs and/or symptoms; and on the proper disposal of unused drug [*see Warnings and Precautions (5.2) and Drug Abuse and Dependence (9.2)*].

Withdrawal Reactions

Advise patients or caregivers that abrupt withdrawal of AEDs may increase their risk of seizure. Inform patients that the continued use of SYMPAZAN may lead to clinically significant physical dependence and that abrupt discontinuation or rapid dosage reduction of SYMPAZAN may precipitate acute withdrawal reactions, which can be life-threatening. Inform patients that in some cases, patients taking benzodiazepines have developed a protracted withdrawal syndrome with withdrawal symptoms lasting weeks to more than 12 months. Instruct patients that discontinuation or dosage reduction of SYMPAZAN may require a slow taper [*see Warnings and Precautions (5.3) and Drug Abuse and Dependence (9.3)*].

Somnolence or Sedation

Advise patients or caregivers to check with their healthcare provider before SYMPAZAN[®] is taken with other CNS depressants such as other benzodiazepines, opioids, tricyclic antidepressants, sedating antihistamines, or alcohol [*see Warnings and Precautions (5.4, 5.5)*].

If applicable, caution patients about operating hazardous machinery, including automobiles, until they are reasonably certain that SYMPAZAN[®] does not affect them adversely (e.g., impair judgment, thinking or motor skills).

Hypersensitivity

Inform patients or caregivers that SYMPAZAN[®] is contraindicated in patients with a history of hypersensitivity to the drug or its ingredients [*see Warnings and Precautions (5.6)*].

Interactions with Hormonal Contraceptives

Counsel women to also use non-hormonal methods of contraception when SYMPAZAN[®] is used with hormonal contraceptives and to continue these alternative methods for 28 days after discontinuing SYMPAZAN[®] to ensure contraceptive reliability [*see Drug Interactions (7.3), Clinical Pharmacology (12.3)*].

Serious Dermatological Reactions

Advise patients or caregivers that serious skin reactions have been reported in patients taking clobazam. Serious skin reactions, including SJS/TEN, may need to be treated in a hospital and may be life-threatening. If a skin

reaction occurs while taking SYMPAZAN[®], patients or caregivers should consult with healthcare providers immediately [*see Warnings and Precautions (5.6)*].

Suicidal Thinking and Behavior

Counsel patients, their caregivers, and their families that AEDs, including SYMPAZAN[®], may increase the risk of suicidal thoughts and behavior and advise them of the need to be alert for the emergence or worsening of symptoms of depression, any unusual changes in mood or behavior, or the emergence of suicidal thoughts, behavior, or thoughts of self-harm. Patients should report behaviors of concern immediately to healthcare providers [*see Warnings and Precautions (5.7)*].

Use in Pregnancy

Advise pregnant women and women of childbearing potential that the use of SYMPAZAN[®] during pregnancy can cause fetal harm which may occur early in pregnancy before many women know they are pregnant. Instruct patients to notify their healthcare provider if they become pregnant or intend to become pregnant during therapy. When appropriate, prescribers should counsel pregnant women and women of childbearing potential about alternative therapeutic options.

Advise patients that there is a pregnancy registry that collects information about the safety of antiepileptic drugs during pregnancy [*see Use in Specific Populations (8.1)*].

Use in Lactation

Counsel patients that SYMPAZAN[®] is excreted in breast milk. Instruct patients to notify their physician if they are breast feeding or intend to breast feed during therapy and counsel nursing mothers to observe their infants for poor sucking and somnolence [*see Use in Specific Populations (8.2)*].

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