

PRODUCT MONOGRAPH

**Pr**TRI-CYCLEN®\*

norgestimate and ethinyl estradiol tablets, House Std.

0.180 mg norgestimate and 0.035 mg ethinyl estradiol Tablets

0.215 mg norgestimate and 0.035 mg ethinyl estradiol Tablets

0.250 mg norgestimate and 0.035 mg ethinyl estradiol Tablets

Oral Contraceptive

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### **PHARMACOLOGICAL CLASSIFICATION**

Synthetic steroidal combination oral contraceptive.

### **CLINICAL PHARMACOLOGY**

The primary mechanism of action of TRI-CYCLEN<sup>®</sup> Tablets is an inhibition of ovulation. Additionally, other effects caused by the treatment (for example, alteration of the endometrium and the thickening of the cervical mucus) appear to interfere with implantation and conception.

### **INDICATIONS AND CLINICAL USE**

TRI-CYCLEN<sup>®</sup> Tablets are indicated for conception control.

TRI-CYCLEN<sup>®</sup> Tablets are indicated for the treatment of moderate acne vulgaris in females who have no known contraindications to oral contraceptive therapy.

## CONTRAINDICATIONS

1. History of or actual thrombophlebitis or thromboembolic disorders.
2. Known thrombophilic conditions.
3. History of or actual cerebrovascular disorders.
4. History of or actual myocardial infarction or coronary arterial disease.
5. Active liver disease or history of or actual benign or malignant liver tumours.
6. Known or suspected carcinoma of the breast.
7. Known or suspected estrogen-dependent neoplasia.
8. Undiagnosed abnormal vaginal bleeding.
9. Any ocular lesion arising from ophthalmic vascular disease, such as partial or complete loss of vision or defect in visual fields.
10. When pregnancy is suspected or diagnosed.
11. Valvular heart disease with complications.
12. Persistent blood pressure values  $\geq 160$  mm Hg systolic or  $\geq 100$  mm Hg diastolic.
13. Diabetes with vascular involvement.
14. Cholestatic jaundice or history of jaundice of pregnancy.
15. Migraine with focal aura.
16. Hypersensitivity to any component of this product.

## WARNINGS

### ***1. Predisposing Factors for Coronary Artery Disease***

Cigarette smoking increases the risk of serious cardiovascular side effects and mortality.

Birth control pills increase this risk, especially with increasing age. Convincing data are available to support an upper age limit of 35 years for oral contraceptive use by women who smoke.

Other women who are independently at high risk for cardiovascular disease include those with diabetes, hypertension (persistent blood pressure values  $\geq 140$  mm Hg systolic or  $\geq 90$  mm Hg diastolic), abnormal lipid profile, or a family history of these. Whether oral contraceptives accentuate this risk is unclear.

In low-risk, non-smoking women of any age, the benefits of oral contraceptive use outweigh the possible cardiovascular risks associated with low-dose formulations. Consequently, oral contraceptives may be prescribed for these women up to the age of menopause.

Cigarette smoking increases the risk of serious adverse effects on the heart and blood vessels. This risk increases with age and becomes significant in oral contraceptive users older than 35 years of age. Women should be counselled not to smoke.

## **2. Venous and Arterial Thrombosis and Thromboembolism**

### Venous thrombosis and thromboembolism

Epidemiological studies have shown that the incidence of venous thromboembolism (VTE) in users of oral contraceptives with low estrogen content (<50 µg ethinyl estradiol) ranges from about 20 to 40 cases per 100,000 women-years, but this risk estimate varies according to the progestogen. This compares with 5 to 10 cases per 100,000 women-years for non-users.

The use of any combined oral contraceptive carries an increased risk of VTE compared with no use. The excess risk of VTE is highest during the first year a woman ever uses a combined oral contraceptive. The increased risk is less than the risk of VTE associated with pregnancy, which is estimated as 60 cases per 100,000 pregnancies. VTE is fatal in 1-2% of cases.<sup>1</sup>

Other generalized risk factors for venous thromboembolism include but are not limited to a personal history, a family history (the occurrence of VTE in a direct relative at a relatively early age may indicate genetic predisposition), severe obesity (body mass index >30 kg/m<sup>2</sup>) and systemic lupus erythematosus. The risk of VTE also increases with age and smoking. The risk of VTE may be temporarily increased with prolonged immobilization, major surgery, or trauma. Also, patients with varicose veins and leg cast should be closely supervised.

If a hereditary or acquired predisposition for venous thromboembolism is suspected, the woman should be referred to a specialist for advice before deciding on any combination oral contraceptives (COC) use.

### Arterial thrombosis and thromboembolism

The use of COCs increases the risk of arterial thrombotic and thromboembolic events. Reported events include myocardial infarction and cerebrovascular events (ischemic and hemorrhagic stroke, transient ischemic attack).

The risk of arterial thrombotic and thromboembolic events is further increased in women with underlying risk factors. Caution must be exercised when prescribing COCs for women with risk factors for arterial thrombotic and thromboembolic events.

### **3. *Discontinue Medication at the Earliest Manifestation of the Following:***

- A. Thromboembolic and Cardiovascular Disorders such as thrombophlebitis, pulmonary embolism, cerebrovascular disorders, myocardial ischemia, mesenteric thrombosis, and retinal thrombosis.
- B. Conditions that Predispose to Venous Stasis and to Vascular Thrombosis (e.g. immobilization after accidents or confinement to bed during long-term illness). Other non-hormonal methods of contraception should be used until regular activities are resumed. For use of oral contraceptives when surgery is contemplated, see **PRECAUTIONS**.
- C. Visual Defects – Partial or Complete
- D. Papilledema or Ophthalmic Vascular Lesions
- E. Severe Headache of Unknown Etiology or Worsening of Pre-existing Migraine Headache

## **PRECAUTIONS**

### **1. *Physical Examination and Follow-up***

Before oral contraceptives are used, a thorough history and physical examination should be performed, including a blood pressure determination. Breasts, liver, extremities, and pelvic organs should be examined. A Papanicolaou smear should be taken if the patient has been sexually active.

The first follow-up visit should be three months after oral contraceptives are prescribed. Thereafter, examinations should be performed at least once a year, or more frequently if indicated. At each annual visit, examination should include those procedures that were done at the initial visit as outlined above or per recommendations of the Canadian Workshop on Screening for Cancer of the Cervix. Their suggestion was that, for women who had two consecutive negative Pap smears, screening could be continued every three years up to the age of 69.

### **2. *Pregnancy***

Oral contraceptives should not be taken by pregnant women. However, if conception accidentally occurs while taking the pill, there is no conclusive evidence that the estrogen and progestin contained in the oral contraceptive will damage the developing child.

### **3. *Breast-feeding***

In breast-feeding women, the use of oral contraceptives results in the hormonal components being excreted in breast milk and may reduce its quantity and quality. If the use of oral contraceptives is initiated after the establishment of lactation, there does not appear to be any effect on the quantity and quality of the milk. There is no evidence that low-dose oral contraceptives are harmful to the nursing infant.

#### 4. *Hepatic Function*

Patients who have had jaundice, including a history of cholestatic jaundice during pregnancy, should be given oral contraceptives with great care and under close observation.

The development of severe generalized pruritus or icterus requires that the medication be withdrawn until the problem is resolved.

If a patient develops jaundice that proves to be cholestatic in type, the use of oral contraceptives should not be resumed. In patients taking oral contraceptives, changes in the composition of the bile may occur and an increased incidence of gallstones has been reported.

Hepatic nodules (adenoma and focal nodular hyperplasia) have been reported, particularly in long-term users of oral contraceptives. Although these lesions are extremely rare, they have caused fatal intra-abdominal hemorrhage and should be considered in women with an abdominal mass, acute abdominal pain, or evidence of intra-abdominal bleeding.

#### 5. *Hypertension*

Patients with essential hypertension whose blood pressure (BP) is well controlled may be given oral contraceptives but only under close supervision. If a significant persistent elevation of blood pressure in previously normotensive or hypertensive subjects occurs at any time during the administration of the drug, cessation of medication is necessary and an alternate method of contraception should be prescribed (see **CONTRAINDICATIONS**).

#### 6. *Migraine and Headache*

The onset or exacerbation of migraine or the development of headache of a new pattern that is recurrent, persistent or severe requires discontinuation of oral contraceptives and evaluation of the cause.

**7. Diabetes**

Current low-dose oral contraceptives exert minimal impact on glucose metabolism. Diabetic patients, or those with a family history of diabetes, should be observed closely to detect any worsening of carbohydrate metabolism. Patients predisposed to diabetes who can be kept under close supervision may be given oral contraceptives. Young diabetic patients whose disease is of recent origin, well-controlled, and not associated with hypertension or other signs of vascular disease such as ocular fundal changes, should be monitored more frequently while using oral contraceptives.

**8. Ocular Disease**

Patients who are pregnant or are taking oral contraceptives may experience corneal edema that may cause visual disturbances and changes in tolerance to contact lenses, especially of the rigid type. Soft contact lenses usually do not cause disturbances. If visual changes or alterations in tolerance to contact lenses occur, temporary or permanent cessation of wear may be advised.

**9. Breasts**

Increasing age and a strong family history are the most significant risk factors for the development of breast cancer. Other established risk factors include obesity, nulliparity and late age for first full-term pregnancy. The identified groups of women that may be at increased risk of developing breast cancer before menopause are long-term users of oral contraceptives (more than eight years) and starters at an early age. In a few women, the use of oral contraceptives may accelerate the growth of an existing but undiagnosed breast cancer. Since any potential increased risk related to oral contraceptive use is small, there is no reason to change prescribing habits at present.

Women receiving oral contraceptives should be instructed in self-examination of their breasts. Their physicians should be notified whenever any masses are detected. A yearly clinical breast examination is also recommended because, if a breast cancer should develop, drugs that contain estrogen may cause a rapid progression.

**10. Vaginal Bleeding**

Persistent irregular vaginal bleeding requires assessment to exclude underlying pathology.

**11. Fibroids**

Patients with fibroids (leiomyomata) should be carefully observed. Sudden enlargement, pain, or tenderness requires discontinuation of the use of oral contraceptives.

**12. Emotional Disorders**

Patients with a history of emotional disturbances, especially the depressive type, may be more prone to have a recurrence of depression while taking oral contraceptives. In cases of a serious recurrence, a trial of an alternative method of contraception should be made which may help to clarify the possible relationship. Women with premenstrual syndrome (PMS) may have a varied response to oral contraceptives, ranging from symptomatic improvement to worsening of the condition.

**13. Laboratory Tests**

Results of laboratory tests should be interpreted in light of the fact that the patient is on oral contraceptives. The following laboratory tests are modified.

**A. Liver Function Tests**

Bromsulphthalein Retention Test (BSP)	Moderate increase
AST (SGOT) and GGT	Minor increase
Alkaline Phosphatase	Variable increase
Serum Bilirubin	Increased, particularly in conditions predisposing to or associated with hyperbilirubinemia

**B. Coagulation Tests**

Factors II, VII, IX, X, XII and XIII	Increased
Factor VIII	Mild increase
Platelet aggregation and adhesiveness	Mild increase in response to common aggregating agents

Fibrinogen	Increased
Plasminogen	Mild increase
Antithrombin III	Mild decrease
Prothrombin Time	Increased

*C. Thyroid Function Tests*

Protein-bound Iodine (PBI)	Increased
Total Serum Thyroxine (T <sub>4</sub> )	Increased
Thyroid Stimulating Hormone (TSH)	Unchanged
T <sub>3</sub> resin-uptake	Decreased

*D. Adrenocortical Function Tests*

Plasma Cortisol	Increased
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*E. Miscellaneous Tests*

Serum Folate	Occasionally decreased
Glucose Tolerance Test	Variable increase with return to normal after 6 to 12 months
Insulin Response	Mild to moderate increase
c-Peptide Response	Mild to moderate increase

**14. Tissue Specimens**

Pathologists should be advised of oral contraceptive therapy when specimens obtained from surgical procedures and Pap smears are submitted for examination.

**15. Return to Fertility**

After discontinuing oral contraceptive therapy, the patient should delay pregnancy until at least one normal spontaneous cycle has occurred in order to date the pregnancy. An alternative contraceptive method should be used during this time.

**16. Amenorrhea**

Women having a history of oligomenorrhea, secondary amenorrhea, or irregular cycles may remain anovulatory or become amenorrheic following discontinuation of estrogen-progestin combination therapy.

Amenorrhea, especially if associated with breast secretion, that continues for six months or more after withdrawal warrants a careful assessment of hypothalamic-pituitary function.

**17. Thromboembolic Complications - Post-surgery**

There is an increased risk of thromboembolic complications in oral contraceptive users after major surgery. If feasible, oral contraceptives should be discontinued and an alternative method substituted at least one month prior to **MAJOR** elective surgery. Oral contraceptive use should not be resumed until the first menstrual period after hospital discharge following surgery.

**18. Drug Interactions**

The concurrent administration of oral contraceptives with other drugs may result in an altered response to either agent (Tables I and II). Reduced effectiveness of the oral contraceptive, should it occur, is more likely with the low-dose formulations.

It is important to ascertain all drugs that a patient is taking, both prescription and non-prescription, including herbal preparations/remedies, before oral contraceptives are prescribed.

## **Changes in Contraceptive Effectiveness Associated With Co-Administration of Other Drugs:**

If a woman on hormonal contraceptives takes a drug or herbal product that induces enzymes, including CYP3A4, that metabolize contraceptive hormones, she should be counselled to use additional contraception or a different method of contraception. Drugs or herbal products that induce such enzymes may decrease the plasma concentrations of contraceptive hormones, and may decrease the effectiveness of hormonal contraceptives or increase breakthrough bleeding. Some drugs or herbal products that may decrease the effectiveness of hormonal contraceptives include :<sup>†</sup>

- modafinil
- oxcarbazepine
- St. John's wort
- topiramate

<sup>†</sup> Additional drugs are listed in Table I.

HIV protease inhibitors and non-nucleoside reverse transcriptase inhibitors: Significant changes (increase or decrease) in the plasma levels of the estrogen and progestin have been noted in some cases of co-administration of HIV protease inhibitors and non-nucleoside reverse transcriptase inhibitors.

Antibiotics: There have been reports of pregnancy while taking hormonal contraceptives and antibiotics, but clinical pharmacokinetic studies have not shown consistent effects of antibiotics on plasma concentrations of synthetic steroids.

### **Increase in Plasma Hormone Levels Associated With Co-Administered Drugs:**

Some drugs and grapefruit juice may increase the plasma levels of ethinyl estradiol if co-administered. Examples include:

- acetaminophen
- ascorbic acid
- CYP3A4 inhibitors (including itraconazole, ketoconazole, voriconazole and fluconazole)

- grapefruit juice
- HMG-CoA reductase inhibitors (including atorvastatin and rosuvastatin)

**Changes in Plasma Levels of Co-Administered Drugs:**

Combination hormonal contraceptives may also affect the pharmacokinetics of some other drugs if used concomitantly. Examples of drugs whose plasma levels may be increased (due to CYP inhibition) include:<sup>†</sup>

- omeprazole
- voriconazole

Examples of drugs whose plasma levels may be decreased (due to induction of glucuronidation) include:<sup>†</sup>

- morphine
- salicylic acid
- temazepam

<sup>†</sup> Additional drugs are listed in Table II.

Physicians are advised to consult the labelling of concurrently used drugs to obtain further information about interactions with hormonal contraceptives or the potential for enzyme alterations.

Refer to *Oral Contraceptives 1994* (Chapter 8), Health Canada, for other possible drug interactions with OCs.

**TABLE I: Drugs That May Decrease the Efficacy of Oral Contraceptives**

<b>Class of Compound</b>	<b>Drug</b>	<b>Proposed Mechanism</b>	<b>Suggested Management</b>
Anticonvulsants	Carbamazepine Ethosuximide Phenobarbital Phenytoin Primidone	Induction of hepatic microsomal enzymes. Rapid metabolism of estrogen and increased binding of progestin and ethinyl estradiol to SHBG.	Use higher dose OCs (50 µg ethinyl estradiol), another drug or another method.
Antibiotics	Ampicillin Cotrimoxazole Penicillin	Enterohepatic circulation disturbance, intestinal hurry.	For short course, use additional method or use another drug. For long course, use another method.
	Rifampin	Increased metabolism of progestins. Suspected acceleration of estrogen metabolism.	Use another method.
	Chloramphenicol Metronidazole Neomycin Nitrofurantoin Sulfonamides Tetracyclines	Induction of hepatic microsomal enzymes. Also disturbance of enterohepatic circulation.	For short course, use additional method or use another drug. For long course, use another method.
	Troleandomycin	May retard metabolism of OCs, increasing the risk of cholestatic jaundice.	
Antifungals	Griseofulvin	Stimulation of hepatic metabolism of contraceptive steroids may occur.	Use another method.
Cholesterol Lowering Agent	Cholestyramine	May result in hastened elimination and impaired effectiveness.	
Sedatives and Hypnotics	Benzodiazepines Barbiturates Chloral Hydrate Glutethimide Meprobamate	Induction of hepatic microsomal enzymes.	For short course, use additional method or another drug. For long course, use another method or higher dose OCs.
Antacids		Decreased intestinal absorption of progestins.	Dose two hours apart.
Other Drugs	Phenylbutazone Antihistamines Analgesics Antimigraine preparations Vitamin E	Reduced OC efficacy has been reported. Remains to be confirmed.	
	Bosentan	Induction of hepatic microsomal enzymes.	Consider switching to a non-hormonal contraceptive method or adding a barrier method to oral contraceptive therapy.

**TABLE II: Modification of Other Drug Action by Oral Contraceptives**

<b>Class of Compound</b>	<b>Drug</b>	<b>Modification of Drug Action</b>	<b>Suggested Management</b>
Alcohol		Possible increased levels of ethanol or acetaldehyde.	Use with caution.
Alpha-II Adrenoreceptor Agents	Clonidine	Sedation effect increased.	Use with caution.
Anticoagulants	All	OCs increase clotting factors, decrease efficacy. However, OCs may potentiate action in some patients.	Use another method.
Anticonvulsants	All	Fluid retention may increase risk of seizures.	Use another method.
	Lamotrigine	Significantly decreased lamotrigine levels (due to induction of lamotrigine glucuronidation) may lead to breakthrough seizures.	Adjust dose of drug if necessary.
Antidiabetic Drugs	Oral Hypoglycemics and Insulin	OCs may impair glucose tolerance and increase blood glucose.	Use low-dose estrogen and progestin OC or another method. Monitor blood glucose.
Antihypertensive Agents	Guanethidine and Methyldopa	Estrogen component causes sodium retention, progestin has no effect.	Use low-dose estrogen OC or use another method.
	Beta Blockers	Increased drug effect (decreased metabolism).	Adjust dose of drug if necessary. Monitor cardiovascular status.
Antipyretics	Acetaminophen	Increased metabolism and renal clearance.	Dose of drug may have to be increased.
	Antipyrine	Impaired metabolism.	Decrease dose of drug.
	ASA	Effects of ASA may be decreased by the short-term use of OCs.	Patients on chronic ASA therapy may require an increase in ASA dosage.
Aminocaproic Acid		Theoretically, a hypercoagulable state may occur because OCs augment clotting factors.	Avoid concomitant use.
Betamimetic Agents	Isoproterenol	Estrogen causes decreased response to these drugs.	Adjust dose of drug as necessary. Discontinuing OCs can result in excessive drug activity.

**TABLE II (cont'd): Modification of Other Drug Action by Oral Contraceptives**

<b>Class of Compound</b>	<b>Drug</b>	<b>Modification of Drug Action</b>	<b>Suggested Management</b>
Caffeine		The actions of caffeine may be enhanced as OCs may impair the hepatic metabolism of caffeine.	Use with caution.
Corticosteroids	Prednisone Prednisolone	Markedly increased serum levels.	Possible need for decrease in dose.
Cyclosporine		May lead to an increase in cyclosporine levels and hepatotoxicity.	Monitor hepatic function. The cyclosporine dose may have to be decreased.
Folic Acid		OCs have been reported to impair folate metabolism.	May need to increase dietary intake, or supplement.
Meperidine		Possible increased analgesia and CNS depression due to decreased metabolism of meperidine.	Use combination with caution.
Phenothiazine Tranquilizers	All Phenothiazines, Reserpine and similar drugs	Estrogen potentiates the hyperprolactinemia effect of these drugs.	Use other drugs or lower dose OCs. If galactorrhea or hyperprolactinemia occurs, use other method.
Sedatives and Hypnotics	Chlordiazepoxide Lorazepam Oxazepam Diazepam	Increased effect (increased metabolism).	Use with caution.
Theophylline	All	Decreased oxidation, leading to possible toxicity.	Use with caution. Monitor theophylline levels.
Tricyclic Antidepressants	Clomipramine (possibly others)	Increased side effects; i.e. depression.	Use with caution.
Vitamin B <sub>12</sub>		OCs have been reported to reduce serum levels of Vitamin B <sub>12</sub> .	May need to increase dietary intake, or supplement.

## NON-CONTRACEPTIVE BENEFITS OF ORAL CONTRACEPTIVES

Several health advantages other than contraception have been reported.

1. Combination oral contraceptives reduce the incidence of cancer of the endometrium and ovaries.
2. Oral contraceptives reduce the likelihood of developing benign breast disease and, as a result, decrease the incidence of breast biopsies.
3. Oral contraceptives reduce the likelihood of development of functional ovarian cysts.
4. Pill users have less menstrual blood loss and have more regular cycles, thereby reducing the chance of developing iron-deficiency anemia.
5. The use of oral contraceptives may decrease the severity of dysmenorrhea and premenstrual syndrome, and may improve acne vulgaris, hirsutism, and other androgen-mediated disorders. TRI-CYCLEN<sup>®</sup> Tablets are also used to treat moderate acne in females who are able to take oral contraceptives.
6. Oral contraceptives decrease the incidence of acute pelvic inflammatory disease and, thereby, reduce as well the incidence of ectopic pregnancy.
7. Oral contraceptives have potential beneficial effects on endometriosis.

Oral contraceptives **DO NOT PROTECT** against sexually transmitted diseases including HIV/AIDS. For protection against STDs, it is advisable to use latex condoms **IN COMBINATION WITH** oral contraceptives.

## **ADVERSE REACTIONS**

An increased risk of the following serious adverse reactions has been associated with the use of oral contraceptives:

- Thrombophlebitis and venous thrombosis with or without embolism
- Arterial thromboembolism
- Pulmonary embolism
- Mesenteric thrombosis
- Neuro-ocular lesions (e.g. retinal thrombosis)
- Myocardial infarction
- Cerebral thrombosis
- Cerebral hemorrhage
- Hypertension
- Benign hepatic tumours
- Gallbladder disease

The following adverse reactions also have been reported in patients receiving oral contraceptives. Nausea and vomiting, usually the most common adverse reaction, occurs in approximately 10 per cent or less patients during the first cycle. Other reactions, as a general rule, are seen less frequently or only occasionally, as follows:

<b>Cardiovascular System:</b>	Edema
	Slight rise of blood pressure
<b>Genital Tract:</b>	Breakthrough bleeding
	Spotting
	Change in menstrual flow
	Dysmenorrhea
	Amenorrhea during and after treatment
	Vaginal candidiasis
	Premenstrual-like syndrome
	Temporary infertility after discontinuance of treatment

	Vaginitis
	Endocervical hyperplasias
	Increase in cervical erosion and secretion
<b>Neoplasms:</b>	Malignant hepatic tumors
	Cervical cancer
	Increase in size of uterine leiomyomata
	Breast cancer
<b>Breast:</b>	Pain, tenderness, enlargement, and secretion
	Possible diminution in lactation when given immediately postpartum
<b>Skin and Subcutaneous Tissue:</b>	Chloasma or melasma which may persist
	Rash (allergic)
	Hirsutism
	Loss of scalp hair
	Erythema multiforme
	Erythema nodosum
	Raynaud's phenomenon
	Hemorrhagic eruption
	Porphyria
	Acne
	Seborrhea
	Pemphigoid (herpes gestationis)
	Urticaria
	Angioedema
<b>CNS:</b>	Migraine
	Depression
	Headache
	Nervousness
	Dizziness
	Changes in libido
	Chorea

<b>Metabolic:</b>	Reduced tolerance to carbohydrates Change in weight (increase or decrease) Changes in appetite
<b>Gastro-intestinal Tract:</b>	Gastrointestinal symptoms (such as abdominal cramps and bloating) Colitis Pancreatitis
<b>Hepatobiliary:</b>	Cholestatic jaundice Budd-Chiari syndrome
<b>Eyes:</b>	Intolerance to contact lenses Change in corneal curvature (steepening) Cataracts Optic neuritis Retinal thrombosis
<b>Urinary:</b>	Impaired renal function Hemolytic uremic syndrome Cystitis-like syndrome
<b>Others:</b>	Rhinitis Auditory disturbances

### **TREATMENT OF OVERDOSE OR ACCIDENTAL INGESTION**

In case of overdose or accidental ingestion by children, the physician should observe the patient closely, although generally no treatment is required. Gastric lavage may be utilized if considered necessary. Overdosage may cause nausea and vomiting and withdrawal bleeding may occur in females. There are no antidotes and treatment should be symptomatic.

For management of a suspected drug overdose, contact your regional Poison Control Centre.
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## DOSAGE AND ADMINISTRATION

### INFORMATION TO PATIENTS ON HOW TO TAKE THE BIRTH CONTROL PILL

1. **READ THESE DIRECTIONS**

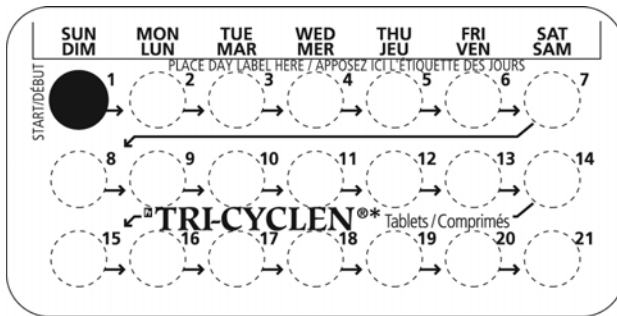
- before you start taking your pills, and
- any time you are not sure what to do.

2. **LOOK AT YOUR PILL PACK** to see if it has 21 or 28 pills:

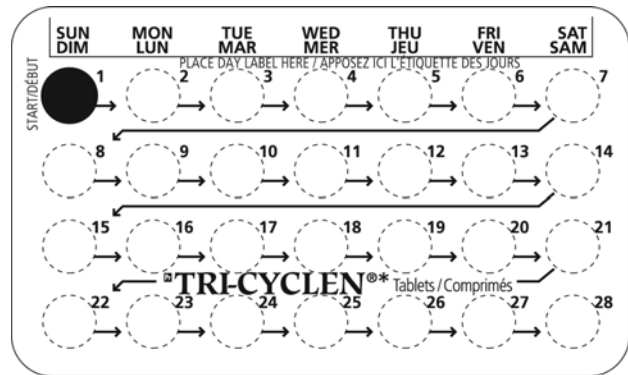
- **21-Pill Pack:** 21 active pills (with hormones) taken daily for three weeks, and then no pills taken for one week or
- **28-Pill Pack:** 21 active pills (with hormones) taken daily for three weeks, and then seven "reminder" pills (no hormones) taken daily for one week.

**ALSO CHECK** the pill pack for instructions on 1) where to start and 2) direction to take pills.

21-Day  
DISCREET Package



28-Day  
DISCREET Package



3. You may wish to use a second method of birth control (e.g. latex condoms and spermicidal foam or gel) for the first seven days of the first cycle of pill use. This will provide a back-up in case pills are forgotten while you are getting used to taking them.
4. **When receiving any medical treatment, be sure to tell your doctor that you are using birth control pills.**

5. **MANY WOMEN HAVE SPOTTING OR LIGHT BLEEDING, OR MAY FEEL SICK TO THEIR STOMACH DURING THE FIRST THREE MONTHS ON THE PILL.** If you do feel sick, do not stop taking the pill. The problem will usually go away. If it does not go away, check with your doctor or clinic.
  
6. **MISSING PILLS ALSO CAN CAUSE SOME SPOTTING OR LIGHT BLEEDING,** even if you make up the missed pills. You also could feel a little sick to your stomach on the days you take two pills to make up for missed pills.
  
7. **IF YOU MISS PILLS AT ANY TIME, YOU COULD GET PREGNANT. THE GREATEST RISKS FOR PREGNANCY ARE:**
  - when you start a pack late, or
  - when you miss pills at the beginning or at the very end of the pack.
  
8. **ALWAYS BE SURE YOU HAVE READY:**
  - **ANOTHER KIND OF BIRTH CONTROL** (such as latex condoms and spermicidal foam or gel) to use as a back-up in case you miss pills, and
  - **AN EXTRA, FULL PACK OF PILLS.**
  
9. **IF YOU EXPERIENCE VOMITING OR DIARRHEA, OR IF YOU TAKE CERTAIN MEDICINES,** such as antibiotics, your pills may not work as well. Use a back-up method, such as latex condoms and spermicidal foam or gel, until you can check with your doctor or clinic.
  
10. **IF YOU FORGET MORE THAN ONE PILL TWO MONTHS IN A ROW,** talk to your doctor or clinic about how to make pill-taking easier or about using another method of birth control.
  
11. **IF YOUR QUESTIONS ARE NOT ANSWERED HERE, CALL YOUR DOCTOR OR CLINIC.**

## **WHEN TO START THE *FIRST* PACK OF PILLS**

### **BE SURE TO READ THESE INSTRUCTIONS:**

- before you start taking your pills, and
- any time you are not sure what to do.

Decide with your doctor or clinic what is the best day for you to start taking your first pack of pills. Your pills may be either a 21-day or a 28-day type.

### **DIRECTIONS FOR 21-DAY AND 28-DAY PILL PACKS**

1. **THE FIRST DAY OF YOUR MENSTRUAL PERIOD (BLEEDING) IS DAY 1 OF YOUR CYCLE.** The pills may be started up to Day 6 of your cycle. Your starting day will be chosen in discussion with your doctor. You will always begin taking your pill on this day of the week. Your doctor may advise you to start taking the pills on Day 1, on Day 5, or on the first Sunday after your period begins. If your period starts on Sunday, start that same day.

2. **IF YOU ARE USING A:**

#### **21-DAY Pill Pack:**

With this type of birth control pill, you are on pills for 21 days and off pills for seven days. You must not be off the pills for more than seven days in a row.

Take one pill at approximately the same time every day for 21 days. **THEN DO NOT TAKE A PILL FOR SEVEN DAYS.** Start a new pack on the eighth day. You will probably have a period during the seven days off the pill. (This bleeding may be lighter and shorter than your usual period.)

#### **28-DAY Pill Pack:**

With this type of birth control pill, you take 21 pills that contain hormones and seven pills that contain no hormones.

Take one pill at approximately the same time every day for 28 days. Begin a new pack the next day, **NOT MISSING ANY DAYS ON THE PILLS**. Your period should occur during the last seven days of using that pill pack.

## INSTRUCTIONS FOR USING YOUR DISCREET PACKAGE FOR BOTH 21-DAY AND 28-DAY PACKS.

FOLLOW THESE INSTRUCTIONS CAREFULLY:

1. **For Day 1 start:** Label the DISCREET Package by selecting the day label that starts with Day 1 of your menstrual period (the first day of menstruation is Day 1). For example, if your first day of menstruation is Tuesday, attach the day label that begins with **TUE** in the space provided.

OR

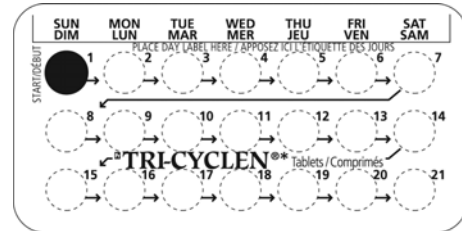
**For Day 5 start:** Label the DISCREET Package by selecting the day label that starts with the day that is 5 days after your period begins. (Count 5 days including the first day of menstruation.) For example, if your first day of menstruation is Saturday, place the day label that starts with **WED** in the space provided.

OR

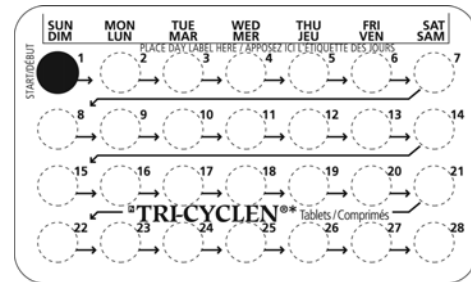
**For Sunday start:** No day label is required. The DISCREET Package is printed for a Sunday start. (The first Sunday after your period begins, or, if your period starts on Sunday, start that same day.)

2. Place the day label in the space where you see the words "Place day label here". Having the DISCREET Package labelled with the days of the week will help remind you to take your pill every day.
3. To begin taking your pills, start with the pill inside the red circle (where you see the word **START**). This pill should correspond to the day of the week that you are taking your first pill. To remove the pill, push through the back of the DISCREET Package.
4. On the following day, take the next pill in the same row, always proceeding from left to right (→). Each row will always begin on the same day of the week.

### 21-Day DISCREET Package



### 28-Day DISCREET Package



## WHAT TO DO DURING THE MONTH

1. **TAKE A PILL AT APPROXIMATELY THE SAME TIME EVERY DAY UNTIL THE PACK IS EMPTY.**

- Try to associate taking your pill with some regular activity such as eating a meal or going to bed.
- Do not skip pills even if you have bleeding between monthly periods or feel sick to your stomach (nausea).
- Do not skip pills even if you do not have sex very often.

2. **WHEN YOU FINISH A PACK**

■ **21 PILLS**

**WAIT SEVEN DAYS** to start the next pack. You will have your period during that week.

■ **28 PILLS**

Start the next pack **ON THE NEXT DAY**. Take one pill every day. Do not wait any days between packs.

## WHAT TO DO IF YOU MISS PILLS

The following chart outlines the actions you should take if you miss one or more of your birth control pills. Match the number of pills missed with the appropriate starting time for your type of pill pack.

SUNDAY START MISS ONE PILL	OTHER THAN SUNDAY START MISS ONE PILL
Take it as soon as you remember and take the next pill at the usual time. This means that you might take two pills in one day.	Take it as soon as you remember, and take the next pill at the usual time. This means that you might take two pills in one day.
MISS TWO PILLS IN A ROW	MISS TWO PILLS IN A ROW
<p><b>First Two Weeks</b></p> <ol style="list-style-type: none"> <li>1. Take two pills the day you remember and two pills the next day.</li> <li>2. Then take one pill a day until you finish the pack.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> </ol> <p><b>Third Week</b></p> <ol style="list-style-type: none"> <li>1. Keep taking one pill a day until Sunday.</li> <li>2. On Sunday, safely discard the rest of the pack and start a new pack that day.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>4. You may not have a period this month.</li> </ol> <p><b>IF YOU MISS TWO PERIODS IN A ROW, CALL YOUR DOCTOR OR CLINIC.</b></p>	<p><b>First Two Weeks</b></p> <ol style="list-style-type: none"> <li>1. Take two pills the day you remember and two pills the next day.</li> <li>2. Then take one pill a day until you finish the pack.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> </ol> <p><b>Third Week</b></p> <ol style="list-style-type: none"> <li>1. Safely dispose of the rest of the pill pack and start a new pack that same day.</li> <li>2. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>3. You may not have a period this month.</li> </ol> <p><b>IF YOU MISS TWO PERIODS IN A ROW, CALL YOUR DOCTOR OR CLINIC.</b></p>
MISS THREE OR MORE PILLS IN A ROW	MISS THREE OR MORE PILLS IN A ROW
<p><b>Any Time in the Cycle</b></p> <ol style="list-style-type: none"> <li>1. Keep taking one pill a day until Sunday.</li> <li>2. On Sunday, safely discard the rest of the pack and start a new pack that day.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>4. You may not have a period this month.</li> </ol> <p><b>IF YOU MISS TWO PERIODS IN A ROW, CALL YOUR DOCTOR OR CLINIC.</b></p>	<p><b>Any Time in the Cycle</b></p> <ol style="list-style-type: none"> <li>1. Safely dispose of the rest of the pill pack and start a new pack that same day.</li> <li>2. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>3. You may not have a period this month.</li> </ol> <p><b>IF YOU MISS TWO PERIODS IN A ROW, CALL YOUR DOCTOR OR CLINIC.</b></p>

**NOTE: 28-DAY PACK** – If you forget any of the seven "reminder" pills (without hormones) in Week 4, just safely dispose of the pills you missed. Then keep taking one pill each day until the pack is empty. You do not need to use a back-up method.

Always be sure you have on hand:

- a back-up method of birth control (such as latex condoms and spermicidal foam or gel) in case you miss pills, and
- an extra, full pack of pills.

**IF YOU FORGET MORE THAN ONE PILL TWO MONTHS IN A ROW, TALK TO YOUR DOCTOR OR CLINIC** about ways to make pill-taking easier or about using another method of birth control.

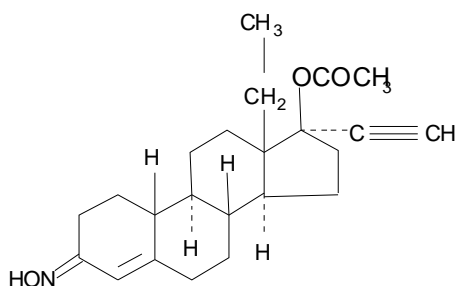
## PHARMACEUTICAL INFORMATION

### (i) DRUG SUBSTANCE

#### **Norgestimate:**

Chemical Name: 18,19-dinor-17-pregn-4-en-20-yn-3-one, 17-(acetyloxy)-13-ethyl-, oxime, (17 $\alpha$ )-(+)-

#### Structural Formula:



Molecular Weight: 369.51

Molecular Formula: C<sub>23</sub> H<sub>31</sub> NO<sub>3</sub>

#### Description:

Norgestimate is a white to off-white fine granular powder. Melting and decomposition begin at 221°C.

#### Solubility:

<u>Solvent</u>	<u>Solubility</u>	<u>Criteria for USP</u>
Distilled Water (DW)	0.076 $\mu$ g/mL	Insoluble
Methanol	20.9 mg/mL	Sparingly Soluble
Ethanol	18.0 mg/mL	Sparingly Soluble
Octanol	10.5 mg/mL	Sparingly Soluble
Acetonitrile	10.6 mg/mL	Sparingly Soluble
Methylene Chloride	>80 mg/mL	Freely to Very Soluble
Heptane	29.9 $\mu$ g/mL	Insoluble
Sesame Oil	1.4 mg/mL	Slightly Soluble

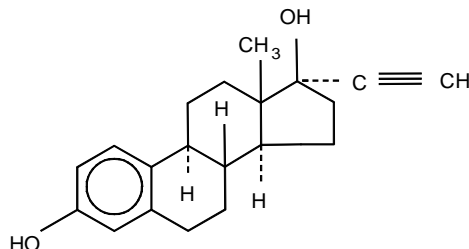
Norgestimate has a partition coefficient of Log P = 5.28 (Octanol/water). No pKa was determined because of its poor solubility in water.

Norgestimate is an optically active mixture of syn and anti isomers having a specific rotation of + 40° to + 46° (1% in chloroform at 25°C at the sodium D line).

**Ethinyl Estradiol:**

Chemical Name: 19-nor-17 $\alpha$ -pregna-1,3,5(10)-trien-20-yne-3,17-diol

Structural Formula:



Molecular Weight: 296.41

Molecular Formula: C<sub>20</sub> H<sub>24</sub> O<sub>2</sub>

Description:

Ethinyl estradiol is a white to creamy white, odourless, crystalline powder with a melting range of 183°C - 184°C. It is insoluble in water and soluble in alcohol, chloroform, ether, vegetable oils and solutions of fixed alkali hydroxides.

(ii) COMPOSITION

Each white TRI-CYCLEN<sup>®</sup> tablet contains 0.180 mg norgestimate plus 0.035 mg ethinyl estradiol. Each white tablet also contains lactose, magnesium stearate, and starch.

Each light blue TRI-CYCLEN<sup>®</sup> tablet contains 0.215 mg norgestimate plus 0.035 mg ethinyl estradiol. Each light blue tablet also contains FD & C Blue # 2 Aluminum Lake, lactose, magnesium stearate and starch.

Each blue TRI-CYCLEN<sup>®</sup> tablet contains 0.250 mg norgestimate plus 0.035 mg ethinyl estradiol. Each blue tablet also contains FD & C Blue # 2 Aluminum Lake, lactose, magnesium stearate and starch.

Each green tablet contains inert ingredients, namely, D & C Yellow # 10 Aluminum Lake, FD & C Blue # 2 Aluminum Lake, lactose, magnesium stearate, microcrystalline cellulose, and starch.

(iii) STORAGE RECOMMENDATIONS

Store between 15°C - 25°C. Leave contents in protective packaging until time of use.

**AVAILABILITY OF DOSAGE FORMS**

TRI-CYCLEN<sup>®</sup> Tablets are available in:

21-day DISCREET Package that contains:

- 7 WHITE tablets each containing 0.180 mg norgestimate and 0.035 mg ethinyl estradiol
- 7 LIGHT BLUE tablets each containing 0.215 mg norgestimate and 0.035 mg ethinyl estradiol
- 7 BLUE tablets each containing 0.250 mg norgestimate and 0.035 mg ethinyl estradiol

28-day DISCREET Package that contains:

- 7 WHITE tablets each containing 0.180 mg norgestimate and 0.035 mg ethinyl estradiol
- 7 LIGHT BLUE tablets each containing 0.215 mg norgestimate and 0.035 mg ethinyl estradiol
- 7 BLUE tablets each containing 0.250 mg norgestimate and 0.035 mg ethinyl estradiol
- 7 GREEN tablets with inert ingredients

## PHARMACOLOGY

### Pharmacodynamics

#### **Oral Contraception**

Norgestimate, alone and in combination with ethinyl estradiol, is an effective antioviulatory agent.<sup>(4)</sup> It is moderately potent in the standard *in vivo* progestational assay which measures endometrial proliferation in rabbits, and it effectively blocks ovulation in rats, hamsters and rabbits. In rats, this blockade correlates well with suppression of the proestrus LH surge and the antioviulatory activity of norgestimate is overcome by LHRH. The blockade appears, like that of other progestational agents, to be the result of inhibition of the hypothalamic/pituitary axis. Norgestimate is an active progestin when administered either orally or parenterally and binds to progestational receptors *in vitro*. Like other progestins, norgestimate inhibits the action of estrogen but is not estrogenic itself. Studies measuring the stimulation of ventral prostate growth in rats, the ability to bind to human SHBG *in vitro*, and the effects on serum SHBG levels in rabbits demonstrate that in contrast to levonorgestrel, norgestimate is not androgenic. It also does not inhibit the action of androgen in rats. No adverse effects on the reproductive, thyroid or adrenal endocrine systems were seen in rats given norgestimate orally for 7 days at doses up to 100 times the clinical dose. *In vitro* studies indicate that norgestimate does not directly alter ovarian aromatase activity. Norgestimate does not exhibit central nervous system or autonomic nervous system activities in rats and does not interfere with autonomic-mediated responses of the cardiovascular system in dogs. *In vitro* studies indicate that norgestimate does not possess antimicrobial activity against diverse pathogenic microorganisms. Ethinyl estradiol is a potent estrogen, which stimulates the uterus and the vagina. Its preclinical pharmacology is well established.<sup>(5,6)</sup>

In humans, the primary mechanism of action of the combination is an inhibition of ovulation. Additionally, other effects caused by the treatment, i.e. alteration of the endometrium and the thickening of the cervical mucus, appear to interfere with implantation and conception. Studies evaluating the effect of the combination on cervical mucus characteristics, hormonal levels and also on the endometrial tissue yielded results that were consistent with the known mechanism of action (i.e. suppression of ovulation) of the combination.

Norgestimate plus ethinyl estradiol elevated HDL levels across all studies. Norgestimate plus ethinyl estradiol exhibited minimal androgenicity. Sex hormone binding globulin levels were increased and testosterone was not readily displaced from its binding sites by norgestimate.

## Acne

Acne is an androgen dependent skin condition with a multifactorial etiology. Elevation in serum sex hormone binding globulin (SHBG), the main testosterone-carrier protein in women, is an indicator of the potential anti-androgenic effects associated with oral contraceptives. The combination of ethinyl estradiol and norgestimate has been shown to increase SHBG and decrease free testosterone in healthy women. The combination of ethinyl estradiol and norgestimate in TRI-CYCLEN<sup>®</sup> has been associated with a decrease in the severity of facial acne in otherwise healthy women with this skin condition.

## Pharmacokinetics

Investigations of norgestimate alone and of norgestimate plus ethinyl estradiol tablets were carried out to study the pharmacokinetics of the drug in oral dosage forms.

Orally administered norgestimate plus ethinyl estradiol in TRI-CYCLEN<sup>®</sup> Tablets has been shown to be absorbed rapidly. Peak plasma concentrations ( $C_{max}$ ), areas under the plasma level vs time curve (AUC), time to peak plasma levels ( $T_{max}$ ), and half-life ( $t_{1/2}$ ) of norgestimate and ethinyl estradiol were as follows:

		0.250 mg Norgestimate (blue) tablet x 2	0.215 mg Norgestimate (light blue) tablet x 2	0.180 mg Norgestimate (white) tablet x 2
$C_{max} \pm SD$	- Norgestimate	278 $\pm$ 140 pg/mL	529 $\pm$ 220 pg/mL	778 $\pm$ 420 pg/mL
	- Ethinyl Estradiol	119 $\pm$ 50 pg/mL	113 $\pm$ 39 pg/mL	117 $\pm$ 56 pg/mL
$T_{max}$	- Norgestimate	1.1 hr	1.2 hr	1.1 hr
	- Ethinyl Estradiol	1.8 hr	1.8 hr	1.9 hr
$AUC \pm SD$	- Norgestimate	1064 $\pm$ 425 hr•pg/mL	1649 $\pm$ 604 hr•pg/mL	2264 $\pm$ 962 hr•pg/mL
	- Ethinyl Estradiol	984 $\pm$ 476 hr•pg/mL	873 $\pm$ 489 hr•pg/mL	815 $\pm$ 450 hr•pg/mL
$t_{1/2}$	- Norgestimate	6.5 hr	7.6 hr	5.3 hr
	- Ethinyl Estradiol	7.3 hr	4.3 hr	5.5 hr

It has been shown that norgestimate, like ethinyl estradiol, is highly bound to plasma proteins (99% as determined *in vitro* for norgestimate); this is consistent with literature reports on other progestational agents. The elimination of norgestimate has been shown to be unaffected by ethinyl estradiol. While some biliary excretion and enterohepatic circulation is seen with norgestimate (similar to that seen with other contraceptive steroids),<sup>(4,5)</sup> elimination is primarily renal.<sup>(4,5,7)</sup>

## TOXICOLOGY

Toxicology studies have evaluated norgestimate alone as well as in combination with ethinyl estradiol in the mouse, rat, rabbit, dog and monkey.<sup>(4)</sup> Ethinyl estradiol has also been evaluated both alone and in combination with synthetic steroidal progestogens in the rat, rabbit, dog and monkey.<sup>(4,9-11)</sup> Compound-related gross and microscopic lesions have been minimal and show the typical pathological changes that are known to occur with the administration of progestogen and estrogen.

### Acute Toxicity Studies

#### Mice

In HaM/1CR CD-1 mice oral norgestimate alone and oral norgestimate + ethinyl estradiol (5:1) each had an LD<sub>50</sub> greater than 5 g/kg body weight. Norgestimate alone at 5 g/kg caused no overt signs of toxicity while the combination caused transient changes in behaviour and one death (one female out of 10 females and 10 males) at 5 g/kg. Oral ethinyl estradiol alone at 5 g/kg caused a transient period of depression and slightly laboured breathing (in males only) with no mortality. The drug was given as a single dose, suspended in carboxymethylcellulose or carboxymethylcellulose and sesame oil.

#### Rats

In hooded Long-Evans rats no deaths or toxic signs were seen at 5 g/kg or 6.2 g/kg orally of norgestimate alone. Norgestimate in combination with ethinyl estradiol (5:1) orally at 5 g/kg caused no deaths or overt signs of toxicity other than a slight decrease in body weight compared

to controls. At autopsy prostate, seminal vesicles and testes were smaller in animals receiving 5g/kg of the combination than in controls. Ethinyl estradiol alone had an oral LD<sub>50</sub> of 5.3 g/kg for males and 3.2 g/kg for females. Drug was administered suspended in carboxymethylcellulose.

### Dogs

Oral norgestimate at 5 g/kg caused no deaths or signs of toxicity in female beagles. Also, no deaths or signs of toxicity were seen in female beagles given ethinyl estradiol 5 g/kg orally. Drugs were given suspended in carboxymethylcellulose.

Norgestimate (14.3 mg/kg) plus ethinyl estradiol (2.0 mg/kg) in ethanol given by i.v. infusion caused no deaths and the only toxic signs were those of acute ethanol intoxication and were also seen in controls.

### Subacute Toxicity Studies

#### Rats

In female hooded Long-Evans rats oral norgestimate at 10.0, 2.5, 1.0, 0.5 and 0 mg/kg/day for 90 days caused no deaths; and all animals appeared normal on the 90th day. Daily observation showed no symptoms of drug-induced effect or toxicity. Hematological examination results were within normal range and urinalysis results gave no indication of toxicity throughout the test period. Biochemical evaluation showed blood components to be within normal range at termination. A dose-related decrease in cholesterol levels was seen. Gross pathological and histopathological examination did not reveal any toxic effects at any dose level.

Norgestimate plus ethinyl estradiol (10:1) was given orally at 11.0, 2.75, 1.10 and 0.55 mg/kg/day for 90 days, and caused no deaths or symptoms indicating drug-induced toxicity. Lab testing and necropsy results were all in the normal range although treated animals appeared to have an increased incidence of nephrocalcinosis and unilateral hydronephrosis.

## Dogs

Female beagles were given oral doses of norgestimate up to 5.0 mg/kg/day. No deaths were seen. Hematological test results were normal as were clinical chemistry values except for a slight depression of cholesterol in higher-dose animals early in the study. Urinalysis results were normal.

Some test groups showed a decrease in organ weight or organ/body weight ratio for uterus and ovaries when compared to controls, and test animals showed suppression of luteinization and/or follicular maturation. Glandular cystic hyperplasia of gallbladder was seen in treated dogs. An extremely low degree of toxicity was exhibited.

Female beagles were given oral doses of norgestimate + ethinyl estradiol (5:1) up to 5.5 mg/kg/day for 90 days. No deaths occurred. Hematological test values were normal for control and low-dose (0.28 mg/kg) animals while WBC was elevated in the two higher-dose groups. Clinical chemistry results were normal except for 1 dog in the high-dose and 2 in the middle-dose groups which had slightly depressed BUN values. Uterus weight increased and ovary weight decreased in test animals when compared to controls. Test animals showed suppression of luteinization and/or follicular maturation and gallbladder glandular hyperplasia.

## Monkeys

Female Rhesus monkeys given norgestimate orally at doses of 5.0, 1.50, 0.25 and 0 mg/kg/day for 90 days showed no signs of toxicity in their behaviour, body weight, hematology results, urinalysis, or clinical chemistry values.

Histological examination revealed no lesions attributable to the drug. The same was seen for oral norgestimate + ethinyl estradiol (10:1) for doses of 5.5, 1.65, 0.275 and 0 mg/kg/day for 90 days except in high-dose animals. These animals showed hypertrophy of cervical mucus glands and an increase in size and number of mammary acini. Evidence of hyperplasia and epithelial sloughing of uterine endometrium was also noted. There was a dose-dependent stimulation of mucus secretion of the cervix.

## Long-Term Toxicity Studies

### Rats

Adult female Long-Evans rats were given norgestimate + ethinyl estradiol (5:1) at doses of 3.00, 0.60, 0.15 and 0 mg/kg/day orally for 24 months. There were 70 animals in each group receiving drug and 110 animals in the vehicle only group.

One hundred and five animals did not survive the dosing schedule. The highest mortality rate was seen in controls. In drug-treated rats, the middle-dose group had the lowest mortality rate while the low-dose group had the highest.

Mean body weights of all treated groups decreased slightly as compared to controls, while the mean food consumption was not significantly different. In all test groups, there was a slight to moderate decrease in RBCs, hematocrit and hemoglobin compared to controls. Clinical chemistry showed a significant decrease in serum cholesterol in all drug-treated groups.

Hepatic changes were seen in all groups (including controls) at 2 years. The severity and incidence of these changes were higher in high- and mid-dose groups than in others. These changes were: nodular or generalized hepatocyte hypertrophy and hyperplasia, hyperplasia foci of hepatocyte coagulation necrosis, sinusoidal telangiectasis, and formation of hematocysts. The reproductive organs showed little microscopic evidence of drug effect, although uterine endometrial hyperplasia was increased in treated animals. The incidence of benign mammary tumours was higher in treated animals than in controls. However, the incidence was statistically significant only in the highest dose group. At 50 to 1000 times the human dose, this combination produced effects remarkably similar to those of other progestin-estrogen combinations.

In a second study, female Long-Evans rats were given norgestimate + ethinyl estradiol (5:1) at 0.150, 0.0375 and 0.01875 mg/kg/day (6.5 to 50 times the human dose), norgestimate alone and ethinyl estradiol alone each at 0.025 mg/kg/day (50 times the human dose) or d-norgestrel at 0.150, 0.075, and 0.0375 mg/kg/day (50 times human dose) for 104 weeks. There were 50 rats in each test group and 100 vehicle controls. Mortality was 55.9% overall with no difference between groups. Minor transient changes were seen for food consumption and body weight

early in the study. Periodic hematological examination showed no deviations beyond normal range except for a slight decrease in hematocrit in the high-dose norgestimate + ethinyl estradiol groups. All clinical chemistry parameters measured demonstrated large variations associated with aging in all groups. The only statistically significant changes were a decrease in the cholesterol in ethinyl estradiol only and norgestimate + ethinyl estradiol high-dose groups, and an elevation of triglycerides in all combination groups. There was no significant difference between control and test rats for either benign or malignant tumours.

### Dogs

Adult female beagles were given norgestimate + ethinyl estradiol orally at doses of 0.60 mg/kg/day (16 dogs) and 0.15, 0.06, and 0 (vehicle controls) mg/kg/day (20 dogs/group) for two years. This constitutes 20 to 200 times the human dose.

No deaths occurred. All animals were in good health at termination and no changes in behaviour were noted. In year 1, estrus was seen in all controls. In year 2, it was seen in 13 of 16 controls and was not seen in any test dog during the study. High-dose dogs had decreased RBCs and hematocrit throughout the study and an increased WBC count from 3 to 18 months of study. Decreased lymphocytes were seen in high- and mid-dose dogs and cholesterol was decreased in the low- and mid-dose dogs. Histologic changes were all estrogenic in nature with minimal evidence of progestational response. In a 7-year study, 15 female beagles/group were given oral doses of 0.1425, 0.057, 0.0057 and 0 mg/kg/day norgestimate + ethinyl estradiol in the 21 days on followed by 7 days off cycle. There were 9 deaths during the study: 2 in the control, 2 in the high-dose, 4 in the mid-dose and 1 in the low-dose group. Daily observation revealed no unexpected adverse effects. Near the end of the study, slight to moderate alopecia and enlarged uteri were palpated in some dogs from the high- and the intermediate-dose groups. Hysterectomies resulting from pyometra were greatest in high-dose and least in low-dose and control animals. Nodules palpated during mammary exams were greatest in number for the low-dose group followed by controls and lowest in the high-dose groups; none appeared drug-related. Heart rate, blood pressure and ECG intervals were all within normal range and no meaningful differences were seen in mean body weights between treated and control dogs.

Hematology findings in the last year included decreases in hematocrit, hemoglobin, and red blood cell mean values in the high-dose group. Throughout, a decline in hematocrit was observed in all groups, but was most evident in the high-dose group, and appears to be drug-related. White blood cell counts were generally normal. Mean percent of segmented neutrophil values were higher in the high-dose group at the 84-month interim, but over the course of the study, this was not generally the case. Mean sedimentation rates at 84 months were increased, primarily in the high-dose group. However, over the entire study, changes in sedimentation rates noted were related to isolated individual increases observed in all test groups.

Coagulation parameters showed sporadic, statistically significant differences, but in general, values over the study were within normal limits. No trends were observed. Decreases in cholesterol and triglycerides and slight increases in potassium and albumin values occurred during the study in treated dogs.

Urinalysis results were generally normal although near the end of the study some dogs from control, high- and low-dose groups had trace to 4 + protein.

### Monkeys

Norgestimate + ethinyl estradiol was given orally to female Rhesus monkeys (20/group except for the high-dose group which had 16) at 0.60, 0.30, 0.06 and 0 mg/kg/day in a 21-day treatment followed by a 7-day no-treatment cycle for 2 years. This dose represents 20 to 200 times the human dose. During the study 1 control, 1 high-dose and 4 mid-dose monkeys died.

No changes in behaviour were observed. A grey mammary discharge was seen more frequently in treated animals as compared to controls, and was seen mainly during withdrawal periods. Early in the study, treated monkeys had lower mean RBC, hematocrit and hemoglobin values, but were comparable to controls and within normal limits by month 12. All treated groups showed elevated triglycerides and decreased alkaline phosphatase values throughout the study. Decreased serum albumin and low total serum protein values were seen at various times during the study. Other clinical chemistry results were within normal limits, as were clotting study

results, urinalysis and urinary steroid determinations. Pap smears produced no evidence of neoplasia.

At autopsy, no drug-related gross or microscopic pathologic lesions were observed in any monkeys, including those that died during the study. Isolated cases of focal hepatic sinusoidal dilation, congestion and/or small hemorrhages were seen at the capsular surfaces. It is believed that they are of little pathological importance due to an absence of any significant liver changes over the 2-year dosing period and the high (up to 200 times the human dose) dose levels of drug. Except for an increase in intralobular stromal tissue in a high-dose monkey, mammary nodules found were focal nodular hyperplasia and these occurred in both control and treated animals. The only organ weight changes seen were decreased ovarian and uterine weights in treated monkeys from the 0.30 and 0.60 mg/kg/day groups.

In a 10-year study, female Rhesus monkeys (16/group) were given oral norgestimate + ethinyl estradiol (5:1) at 150, 30, 3, and 0 mcg/kg/day in a 21 day on followed by 7 days off repeating cycle for the first 4 years. For the remaining 6 years, the monkeys received the medications in a 7:1 ratio, (285, 57, 5.7, 0 mg/kg/day) in the same cycle. Six (3 control, 1 low- and 2 high-dose) monkeys died during the study.

While there were some early differences in weight gains all groups were similar from the second year on. Mammary nodules were noted in all groups during the study and most regressed or disappeared. At the end of the study, the number of animals with nodules was 0, 0, 1 and 1 in the low, mid, high, and control dose groups, respectively. Mammary secretions were noted in some mid- and high-dose monkeys throughout the study.

Hematocrit, erythrocytic parameter changes, mean corpuscular volume, mean leukocyte counts and coagulation parameters were generally similar for all groups.

Clinical chemistry showed a dose-related increase in SGPT. All groups also showed an increase with time, generally lower alkaline phosphatase values for treated monkeys and intermittent slight decreases in serum protein for treated monkeys. BUN for all groups was well within

reference range and no difference between groups was noted for glucose. Reports from the literature indicate a dose-related increase in triglycerides and a decrease in cholesterol for the mid-dose group.<sup>(6)</sup>

Thyroid function test results were typical of those expected for oral contraceptive use in humans. Urinalysis results showed no difference between groups and the results for urinary steroids were unremarkable.

Terminal organ weights for the liver and pituitary were increased while the ovary weights decreased.

The salient non-neoplastic histologic findings consisted predominantly of genito-urinary changes and multifocal myocardial fibrosis. Except for minor histopathologic differences in the ovaries, findings affecting the lower dose animals were essentially comparable with those of the controls. The findings seen in the tissues of the genital tracts and related tissues in the mid- and high-dose animals included: ovarian atrophy associated with absence of active corpora lutea and occasional reduction in the number of maturing follicles, varying degrees of endometrial atrophy occasionally associated with stromal proliferation and/or decidualization of the endometrial stroma, increased mucus secretion of the cervix often associated with villous elongation and crypt dilation of the mucosa, atrophy and columnar cell metaplasia of the vaginal mucosa, occasional atrophy of the oviduct, lobular hyperplasia of some of the mammary glands and dose-related hypertrophy of the pars distalis of the pituitary gland. Multifocal myocardial fibrosis was noted in animals of each group, including controls, although in a slightly higher incidence in the treated groups. This finding was most prominent in 4 of 7 affected high-dose animals. The significance of this lesion is uncertain based on its presence in controls and the known spontaneous occurrence especially in aging animals.

Neoplasms of tissues other than the genito-urinary tract were few and all were considered to be spontaneous. Neoplasms associated with the genito-urinary tract were as follows:

<u>Neoplasm</u>	<u>Dose Group</u>
One muco-epidermoid adenocarcinoma of cervix	high <sup>a</sup>
One leiomyoma of vagina	high <sup>a</sup>
One lobular carcinoma <i>in situ</i> of mammary gland	high <sup>b</sup>
One papilloma of mammary gland	high <sup>b</sup>
One adenoma of mammary gland	high
One urinary bladder papilloma	mid

a = Same Animal; b = Same Animal

The previously listed tumours of monkeys are single occurrences and are generally in different organs. Each of these tumour types has been reported in the literature as spontaneous occurrences. It is difficult to make a definitive etiologic association of the single cervical adenocarcinoma in one high-dose monkey. However, in the absence of any antecedent changes (dysplasia, carcinoma *in situ*) in any of the other 47 treated monkeys, the known spontaneous occurrence (although rare in monkeys) suggests the tumour is probably spontaneous in origin.

## REPRODUCTIVE STUDIES

A fertility and general reproductive performance study was conducted in female Long-Evans rats to assess the effects of norgestimate + ethinyl estradiol (5:1) at 0.120, 0.0833, 0.060, 0.050 and 0.030 mg/kg/day on conception rates, fetal development, parturition and lactation and the viability, growth and reproductive performance of the offspring.

Norgestimate + ethinyl estradiol results in a dose-related suppression of fertility, decreased implantation efficiency and litter size, and an increased fetal resorption in the F<sub>0</sub> females at all dose levels. Slight increases in the incidence of stillbirths were noted in all of the treated

females. In addition, there was a decrease in neonatal survival at 0.060, 0.0833 and 0.120 mg/kg/day.

Similar dose-related findings were observed for the F<sub>1</sub> females but to a lesser degree than the F<sub>0</sub> generation. Trends toward decreased fertility, decreased implantation, F<sub>2</sub> litter size, and increased resorptions were noted in all dose groups. Dystocia and an increased number of stillbirths occurred at the 0.060 mg/kg level. At the 0.060 and 0.0833 mg/kg dose levels, survival of offspring was reduced.

## TERATOLOGY AND FETAL TOXICITY

### Rat

Female Long-Evans rats were treated orally with norgestimate + ethinyl estradiol (5:1) at 0 (vehicle), 0.012, 0.060, and 0.300 mg/kg/day dose levels on days 6-15 of gestation. An increase in "wavy ribs" was noted in rats receiving 0.060 (3/159 fetuses) and 0.300 mg/kg/day (9/128 fetuses), which was statistically significant only in the high-dose group, compared to controls (1/152 fetuses). A reduction in the implantation efficiency and an increase in the number of resorptions were also noted in the high-dose group.

In addition, norgestimate + ethinyl estradiol (5:1) was administered orally to pregnant Long-Evans rats from day 15 of pregnancy through day 21 of lactation at dose levels of 0 (vehicle), 0.03, 0.18, 0.30, and 0.060 mg/kg/day. These levels represent approximately 10, 60, 100, and 200 times the proposed human dose levels. In the F<sub>0</sub> generation, no significant adverse effects were seen on maternal growth, behaviour and reproductive performance. However, there was some evidence of lactational insufficiency at the high-dose level.

In the F<sub>1</sub> generation, viability, growth and reproductive performance were unaffected in the 0.03 mg/kg/day group. At 0.18, 0.30 and 0.60 mg/kg/day, there was a dose-related reduction in female fertility. The remaining drug effects were limited to the high-dose level which showed significantly decreased offspring viability from birth to weaning and depressed pup weight during the mid-lactation period.

There was no significant drug effect on F<sub>2</sub> generation development at any dose level.

### Rabbit

Female New Zealand white rabbits were given oral doses of 0.5% sodium carboxymethylcellulose suspensions of norgestimate + ethinyl estradiol (5:1) at concentrations of 0 (vehicle), 0.012, 0.060 or 0.300 mg/kg/day from day 7 through day 19 of gestation. The only drug-related effect was the high rate of fetal resorptions observed in the high and intermediate 100% and 65.5% dose groups, respectively. No drug-related teratogenic changes were observed in any of the fetuses examined.

## **CLINICAL STUDIES**

### CLINICAL EFFICACY OF TRI-CYCLEN<sup>®</sup> TABLETS

#### Contraception

In four major clinical trials with TRI-CYCLEN<sup>®</sup> Tablets, 4,756 subjects completed 45,244 cycles and a total of 42 pregnancies were reported. This represents an overall use-efficacy (typical user efficacy) pregnancy rate of 1.11 per 100 woman-years. This rate includes patients who did not take the drug correctly. The Pearl Rates for the individual studies ranged from 0.63 to 1.36.

#### Acne

In two double-blind, placebo-controlled, multicentre clinical trials, TRI-CYCLEN<sup>®</sup> Tablets showed a statistically significantly greater improvement for all primary efficacy measures: inflammatory lesion count, total lesion count, and investigator's global assessment (Table III). In the secondary efficacy measures, TRI-CYCLEN<sup>®</sup> Tablets also showed a statistically greater improvement for the end-of-therapy subject's self-assessment. The adverse reaction profile of TRI-CYCLEN<sup>®</sup> Tablets from these two controlled clinical trials is consistent with what has been noted from previous studies involving TRI-CYCLEN<sup>®</sup> Tablets and the known risks associated with oral contraceptives.

TABLE III: Acne Vulgaris Indication  
 Combined Results: Two Multicentre, Placebo-Controlled Trials  
 Primary Efficacy Variables: Evaluable-for-Efficacy Population

	ORTHO TRI-CYCLEN <sup>®</sup>	PLACEBO	
	N=163	N=161	
Mean Age at Enrollment	27.3 years	28.0 years	
Inflammatory Lesions - Mean Percent Reduction	56.6	36.6	p=0.0001
Total Lesions - Mean Percent Reduction	49.6	30.3	p=0.0001
Investigator's Global Progress of Treatment			
- Percent of Subjects improved	88.3	64.0	p<0.001
- Percent of Subjects not improved	11.7	36.0	

### CLINICAL SAFETY OF TRI-CYCLEN<sup>®</sup> TABLETS

#### U.S. Multicentre, Comparative, Phase III Study

In the major comparative U.S. study, 8.6% (182 of 2115) of the TRI-CYCLEN<sup>®</sup> subjects discontinued due to adverse experiences, while 6.8% (145 of 2132) of subjects receiving the norgestrel-containing product discontinued due to adverse experiences. The difference between the groups was not statistically significant and the adverse experiences were characteristic of those expected among women taking low-dose combination oral contraceptives.

Among all patients, 70.50% (1491 of 2115) receiving TRI-CYCLEN<sup>®</sup> Tablets and 67.64% (1442 of 2132) receiving Triphasil reported at least one adverse experience during the trial. The most common adverse experiences in the norgestimate triphasic regimen were headaches (29.3%), upper respiratory infection (12.2%), dysmenorrhea (11.6%), and nausea (10.87%). The incidences of such experiences in the norgestrel regimen were 29.5%, 11.9%, 11.9%, and 10.32% respectively.

### U.S. Multicentre, Non-comparative, Phase III Studies

In the two non-comparative, U.S. studies combined, 296 of 1,783 (16.6%) subjects discontinued for medical use-related reasons. Only 77 (4.3%) discontinued treatment due to bleeding events.

A perspective on patient tolerance to effects reported during the course administration of TRI-CYCLEN<sup>®</sup> Tablets can be obtained from an examination of the incidence of "drop-out" from the studies for the undesirable effects reported as follows:

#### SUBJECT FREQUENCY OF ADVERSE EXPERIENCES CAUSING DISCONTINUATION (COMBINED NON-COMPARATIVE STUDIES, N=1783)

<u>Adverse Experience</u>	<u>Number (Percent)</u>
Breakthrough Bleeding or Spotting	77 (4.32)
Headache	54 (3.03)
Nausea and/or Vomiting	39 (2.19)
Menstrual Disturbances Other than Amenorrhea, Breakthrough Bleeding or Spotting	38 (2.13)
Mood Alterations	28 (1.57)
Weight Gain	23 (1.29)
Fluid Retention	21 (1.18)
Gastrointestinal Disorders	19 (1.07)
Lab Abnormalities	16 (0.90)
Hypertension	13 (0.73)
Other OB/Gyn	13 (0.73)
Skin Problems	8 (0.45)
Eye Abnormalities	8 (0.45)
Amenorrhea*	4 (0.22)
All Other	41 (2.30)

\*The statistical definition of amenorrhea is two consecutive valid cycles with no bleeding or spotting. According to this definition, no TRI-CYCLEN<sup>®</sup> subjects had amenorrhea.

### Laboratory Tests

A broad range of clinical laboratory data have been collected in a number of studies. Statistically significant laboratory changes were generally clinically insignificant and consistent with use of low-dose oral contraceptives.

Lipid profile changes are relevant due to their relationship to cardiovascular disease. TRI-CYCLEN<sup>®</sup> Tablets are associated with minimal adverse effect on triglycerides, LDL, and total cholesterol. Uncharacteristic of most currently approved products, TRI-CYCLEN<sup>®</sup> Tablets are associated with a salutary increase in HDL and HDL/LDL ratios.<sup>(12)</sup>

Changes observed in thyroid analytes were clinically insignificant and consistent with those expected for low-dose oral contraceptive use.

Liver function test mean values generally decreased with time on therapy and, consistent with results from other low-dose products, showed no adverse clinical impact.

No unusual findings for thyroid function, kidney function, or hematology values were noted with TRI-CYCLEN<sup>®</sup> Tablets and normal coagulability of the blood was maintained.

TRI-CYCLEN<sup>®</sup> Tablets also exhibited minimal androgenicity. Sex hormone binding globulin levels were increased and testosterone was not readily displaced from its binding sites by norgestimate.

As both progestins and estrogens may modify carbohydrate metabolism, this area was investigated. No clinically significant changes were observed in fasting serum or blood glucose levels and associated blood insulin levels of subjects receiving TRI-CYCLEN<sup>®</sup> Tablets. Measurement of glycosylated hemoglobin confirmed these results demonstrating that there was no adverse change in carbohydrate metabolism.

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## CONSUMER INFORMATION

Pr**TRI-CYCLEN**<sup>®\*</sup>

norgestimate and ethinyl estradiol tablets, House Std.

This leaflet is designed specifically for Consumers. This leaflet is a summary and will not tell you everything about **TRI-CYCLEN**<sup>®</sup>. Contact your doctor or pharmacist if you have any questions about the drug.

### ABOUT THIS MEDICATION

#### What the medication is used for:

- prevention of pregnancy
- to treat moderate acne

#### What it does:

**TRI-CYCLEN**<sup>®</sup> is a birth control pill (oral contraceptive) that contains two female sex hormones (norgestimate and ethinyl estradiol). It has been shown to be highly effective in preventing pregnancy when taken as prescribed by your doctor. Pregnancy is always more risky than taking birth control pills, except in smokers older than age 35.

Birth control pills work in two ways:

1. They inhibit the monthly release of an egg by the ovaries.
2. They change the mucus produced by the cervix. This slows the movement of the sperm through the mucus and through the uterus (womb).

#### Effectiveness of Birth Control Pills:

Combination birth control pills are more than 99 per cent effective in preventing pregnancy when

- the pill is **TAKEN AS DIRECTED**, and
- the amount of estrogen is 20 micrograms or more.

A 99 per cent effectiveness rate means that if 100 women used birth control pills for one year, one woman in the group would get pregnant.

The chance of becoming pregnant increases with incorrect use.

#### Other Ways to Prevent Pregnancy:

Other methods of birth control are available to you. They are usually less effective than birth control pills. When used properly, however, other methods of birth control are effective enough for many women.

The following table gives reported pregnancy rates for various forms of birth control, including no birth control. The reported rates represent the number of women out of 100 who would become pregnant in one year.

### Reported Pregnancies per 100 Women per Year:

Combination pill	less than 1 to 2
Intrauterine device (IUD)	less than 1 to 6
Condom with spermicidal foam or gel	1 to 6
Mini-pill	3 to 6
Condom	2 to 12
Diaphragm with spermicidal foam or gel	3 to 18
Spermicide	3 to 21
Sponge with spermicide	3 to 28
Cervical cap with spermicide	5 to 18
Periodic abstinence (rhythm), all types	2 to 20
No birth control	60 to 85

Pregnancy rates vary widely because people differ in how carefully and regularly they use each method. (This does not apply to IUDs since they are implanted in the uterus.) Regular users may achieve pregnancy rates in the lower ranges. Others may expect pregnancy rates more in the middle ranges.

The effective use of birth control methods other than birth control pills and IUDs requires more effort than taking a single pill every day. It is an effort that many couples undertake successfully.

#### When it should not be used:

The birth control pill is not suitable for every woman. In a small number of women, serious side effects may occur. Your doctor can advise you if you have any conditions that would pose a risk to you. The use of the birth control pill should always be supervised by your doctor.

**You should not use TRI-CYCLEN**<sup>®</sup> if you have or have had any of the following conditions:

- unusual vaginal bleeding that has not yet been diagnosed;
- blood clots in the legs, lungs, eyes, or elsewhere or thrombophlebitis (inflammation of the veins);
- a stroke, heart attack, or coronary artery disease (angina pectoris) or a condition that may be a first sign of a stroke (such as a transient ischemic attack or small reversible stroke);
- disease of the heart valves with complications;
- persistent high blood pressure;
- heavy smoking (>15 cigarettes per day) and over age 35;
- you are scheduled for major surgery;
- prolonged bed rest;
- loss of vision due to blood vessel disease of the eye;
- known or suspected cancer of the breast or sex organs;
- liver tumour associated with the use of the pill or other estrogen-containing products;
- jaundice (yellowing of skin and eyes) or liver disease if still present;
- diabetes with complications of the kidneys, eyes, nerves, or blood vessels;

- migraines with visual and/or sensory disturbances;
- known abnormalities of blood clotting system that increase your risk for developing blood clots;
- you are pregnant or if pregnancy is suspected; and/or
- allergic reaction to ethinyl estradiol, norgestimate or to any of the other ingredients in TRI-CYCLEN<sup>®</sup> (see **What the nonmedicinal ingredients are**).

**What the medicinal ingredients are:**

Norgestimate and ethinyl estradiol

**What the nonmedicinal ingredients are:**

D & C Yellow # 10 Aluminum Lake, FD & C Blue # 2 Aluminum Lake, lactose, magnesium stearate, microcrystalline cellulose and starch

**What dosage forms it comes in:**

TRI-CYCLEN<sup>®</sup> (norgestimate and ethinyl estradiol)

Tablets are available in a 21-day regimen and a 28-day regimen.

21-day DISCREET Package contains: 7 WHITE tablets each containing 0.180 mg norgestimate and 0.035 mg ethinyl estradiol, 7 LIGHT BLUE tablets each containing 0.215 mg norgestimate and 0.035 mg ethinyl estradiol and 7 BLUE tablets each containing 0.250 mg norgestimate and 0.035 mg ethinyl estradiol

28-day DISCREET Package contains: 7 WHITE tablets each containing 0.180 mg norgestimate and 0.035 mg ethinyl estradiol, 7 LIGHT BLUE tablets each containing 0.215 mg norgestimate and 0.035 mg ethinyl estradiol, 7 BLUE tablets each containing 0.250 mg norgestimate and 0.035 mg ethinyl estradiol and 7 GREEN tablets with inactive ingredients.

**or pharmacist if the following apply to you:**

- breast disease (e.g. breast lumps) or a family history of breast cancer
- diabetes
- high blood pressure
- abnormal levels of fats in the bloodstream (high cholesterol or triglycerides)
- cigarette smoking
- migraine headaches
- heart or kidney disease
- epilepsy
- depression
- fibroid tumours of the uterus
- wear contact lenses
- pregnant or breast-feeding
- systemic lupus erythematosus
- inflammatory bowel disease such as Crohn's disease or ulcerative colitis
- hemolytic uremic syndrome
- sickle cell disease
- problems with the valves in your heart and/or have an irregular heart rhythm
- hereditary angioedema or have had episodes of swelling in body parts such as hands, feet, face, or airway passages
- gallbladder or pancreatic disease
- plans for forthcoming surgery
- history of jaundice or other liver disease.

You should also inform your doctor about a family history of blood clots, heart attacks or strokes.

If you see a different doctor, inform him or her that you are using TRI-CYCLEN<sup>®</sup>.

Tell your doctor if you are scheduled for any laboratory tests since certain blood tests may be affected by hormonal contraceptives.

Also tell your doctor if you are scheduled for **MAJOR** surgery. You should consult your doctor about stopping the use of TRI-CYCLEN<sup>®</sup> four weeks before surgery and not using TRI-CYCLEN<sup>®</sup> for a time period after surgery or during bed rest.

TRI-CYCLEN<sup>®</sup> should be used only under the supervision of a doctor, with regular follow-up to identify side effects associated with its use. Your visits may include a blood pressure check, a breast exam, an abdominal exam and a pelvic exam, including a Pap smear. Visit your doctor three months or sooner after the initial examination. Afterward, visit your doctor at least once a year.

Use TRI-CYCLEN<sup>®</sup> only on the advice of your doctor and carefully follow all directions given to you. You must use the birth control pill exactly as prescribed. Otherwise, you may become pregnant. If you and your doctor decide that, for you, the benefits of TRI-CYCLEN<sup>®</sup> outweigh the risks, you should be aware of the following risks:

**WARNINGS AND PRECAUTIONS**

**Serious Warnings and Precautions**

**Cigarette smoking increases the risk of serious adverse effects on the heart and blood vessels. This risk increases with age and becomes significant in hormonal contraceptive users older than 35 years of age. Women should not smoke.**

**Birth control pills DO NOT PROTECT against sexually transmitted diseases (STDs), including HIV/AIDS.**

**For protection against STDs, it is advisable to use latex condoms IN COMBINATION WITH the birth control pills.**

There are also conditions that your doctor will want to watch closely or that might cause your doctor to recommend a method of contraception other than birth control pills.

**BEFORE you use TRI-CYCLEN<sup>®</sup> talk to your doctor**

**THE RISKS OF USING TRI-CYCLEN®****1. Circulatory disorders (including blood clots in legs, lungs, heart, eyes or brain)**

Blood clots are the most common serious side effects of birth control pills. Clots can occur in many areas of the body. Be alert for the following symptoms and signs of serious adverse effects. Call your doctor immediately if they occur.

- sharp pain in the chest, coughing blood, or sudden shortness of breath. These symptoms could indicate a possible blood clot in the lung.
- pain and/or swelling in the calf. These symptoms could indicate a possible blood clot in the leg.
- crushing chest pain or heaviness. These symptoms could indicate a possible heart attack.
- sudden severe or worsening headache or vomiting, dizziness or fainting, disturbances of vision or speech, or weakness or numbness in an arm or leg. These symptoms could indicate a possible stroke.
- sudden partial or complete loss of vision. This symptom could indicate a blood clot in the eye.

Any of these conditions can cause death or disability. Clots also occur rarely in the blood vessels of the eye, resulting in blindness or impaired vision or in a blood vessel leading to an arm or leg, resulting in damage to or loss of a limb.

Women who use birth control pills have a higher incidence of blood clots. The risk of clotting seems to increase with higher estrogen doses. **It is important, therefore, to use as low a dosage of estrogen as possible.**

**2. Breast cancer**

The most significant risk factors for breast cancer are increasing age and a strong history of breast cancer in the family (mother or sister). Other established risk factors include obesity, never having children, and having your first full-term pregnancy at a late age.

Some women who use birth control pills may be at increased risk of developing breast cancer before menopause which occurs around age 50. These women may be long-term users of birth control pills (more than eight years) or women who start using birth control pills at an early age. In a few women, the use of birth control pills may accelerate the growth of an existing but undiagnosed breast cancer. Early diagnosis, however, can reduce the effect of breast cancer on a woman's life expectancy. The potential risks related to birth control pills seem to be small; however, a yearly breast examination by a doctor is recommended for all women.

**ASK YOUR DOCTOR FOR ADVICE AND INSTRUCTIONS ON REGULAR SELF-EXAMINATION OF YOUR BREASTS.**

**3. Cervical cancer**

Some studies have found an increase of cancer of the cervix in women who use hormonal contraceptives, although this finding may be related to factors other than the use of oral contraceptives. However, there is insufficient evidence to rule out the possibility that oral contraceptives may cause such cancers.

**4. Gallbladder disease**

Users of birth control pills have a greater risk of developing gallbladder disease requiring surgery within the first year of use. The risk may double after four or five years of use.

**5. Liver tumours**

The short and long-term use of birth control pills also has been linked with the growth of liver tumours. Such tumours are **EXTREMELY** rare.

Contact your doctor immediately if you experience nausea, vomiting, severe pain or a lump in the abdomen.

**6. Use during pregnancy**

Birth control pills should never be taken if you think you are pregnant. They will not prevent the pregnancy from continuing. There is no evidence, however, that the pill can damage a developing child. You should check with your doctor about risks to your unborn child from any medication taken during pregnancy.

**7. Use after pregnancy, miscarriage or an abortion**

Your doctor will advise you of the appropriate time to start the use of TRI-CYCLEN® after childbirth, miscarriage, or therapeutic abortion.

**8. Pregnancy after stopping TRI-CYCLEN®**

You will have a menstrual period when you stop taking TRI-CYCLEN®. You should delay pregnancy until another menstrual period occurs within four to six weeks. Contact your doctor for recommendations on alternative methods of contraception during this time.

**9. Use while breast-feeding**

The hormones in birth control pills are known to appear in breast milk. These hormones may decrease the flow of breast milk. Adverse effects on the child have been reported, including yellowing of the skin (jaundice) and breast enlargement. You should use another method of contraception and only consider starting the birth control pill once you have weaned your child completely.

**INTERACTIONS WITH THIS MEDICATION**

Certain drugs may interact with birth control pills to make them less effective in preventing pregnancy or cause an increase in breakthrough bleeding. You may also need to use a nonhormonal method of contraception during any cycle in which you take drugs that can make oral

contraceptives less effective.

**Drugs that may interact with TRI-CYCLEN® include:**

- drugs used for the treatment of epilepsy (e.g. primidone, phenytoin, barbiturates, carbamazepine, lamotrigine, oxcarbazepine, topiramate);
- tuberculosis (e.g. rifampin) and HIV infections (e.g. nevirapine)
- antibiotics (e.g. penicillins, tetracyclines) for infectious diseases
- salicyclic acid
- bosentan
- bronchodilator (e.g. theophylline)
- stimulants (e.g. modafinil)
- lipid lowering drugs (e.g. atorvastatin, rosuvastatin)
- cyclosporine
- antifungals (griseofulvin)
- the herbal remedy St. John’s wort (primarily used for the treatment of depressive moods)
- antihypertensive drugs (for high blood pressure)
- antidiabetic drugs and insulin (for diabetes)
- prednisone
- sedatives and hypnotics (e.g. benzodiazepines, barbiturates, chloral hydrate, glutethimide, meprobamate)
- pain medication (meperidine)
- antidepressants (e.g. clomipramine)
- some nutritional supplements (e.g. vitamin B<sub>12</sub>, vitamin C, folic acid)
- antacids (use 2 hours before or after taking TRI-CYCLEN®)

The pill may also interfere with the working of other drugs.

Please inform your doctor and pharmacist if you are taking or have recently taken any other drugs or herbal products, even those without a prescription. Also tell any other doctor or dentist who prescribes another drug (or the dispensing pharmacist) that you use TRI-CYCLEN®. They can tell you if you need to use an additional method of contraception and if so, for how long.

*This is not a complete list of possible drug interactions with TRI-CYCLEN®. Talk to your doctor for more information about drug interactions.*

**PROPER USE OF THIS MEDICATION**

**HOW TO TAKE TRI-CYCLEN®:**

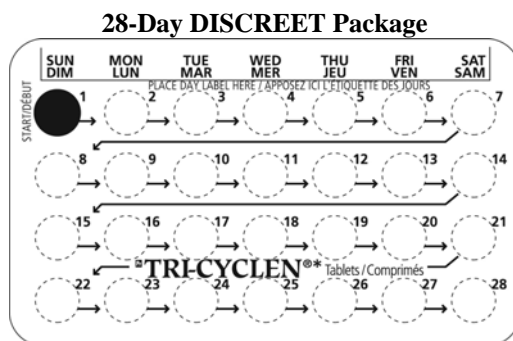
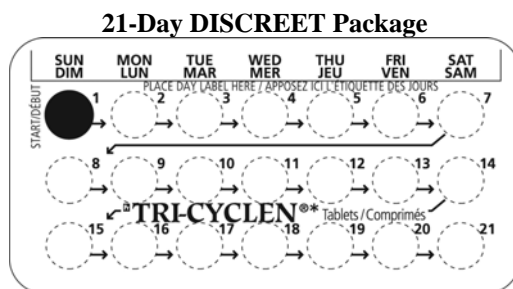
- 1. READ THESE DIRECTIONS**
  - before you start taking your pills, and
  - any time you are not sure what to do.
- 2. LOOK AT YOUR PILL PACK** to see if it has 21 or 28 pills:
  - 21-PILL PACK: 21 active pills (with hormones) taken daily for three weeks, and then no pills taken

for one week

OR

- 28-PILL PACK: 21 active pills (with hormones) taken daily for three weeks, and then seven "reminder" pills (no hormones) taken daily for one week.

**ALSO CHECK:** the pill pack for instructions on 1) where to start and 2) direction to take pills.



3. You may wish to use a second method of birth control (e.g. latex condoms and spermicidal foam or gel) for the first seven days of the first cycle of pill use. This will provide a back-up in case pills are forgotten while you are getting used to taking them.
4. **When receiving any medical treatment, be sure to tell your doctor that you are using birth control pills.**
5. **MANY WOMEN HAVE SPOTTING OR LIGHT BLEEDING, OR MAY FEEL SICK TO THEIR STOMACH DURING THE FIRST THREE MONTHS ON THE PILL.** If you do feel sick, do not stop taking the pill. The problem will usually go away. If it does not go away, check with your doctor or clinic.
6. **MISSING PILLS ALSO CAN CAUSE SOME SPOTTING OR LIGHT BLEEDING,** even if you make up the missed pills. You also could feel a little sick to your stomach on the days you take two pills to make up for missed pills.
7. **IF YOU MISS PILLS AT ANY TIME, YOU COULD GET PREGNANT. THE GREATEST RISKS FOR PREGNANCY ARE:**

- when you start a pack late, or
- when you miss pills at the beginning or at the very end of the pack.

- 8. ALWAYS BE SURE YOU HAVE READY:**
  - **ANOTHER KIND OF BIRTH CONTROL** (such as latex condoms and spermicidal foam or gel) to use as a back-up in case you miss pills, and
  - **AN EXTRA, FULL PACK OF PILLS.**
- 9. IF YOU EXPERIENCE VOMITING OR DIARRHEA, OR IF YOU TAKE CERTAIN MEDICINES,** such as antibiotics, your pills may not work as well. Use a back-up method, such as latex condoms and spermicidal foam or gel, until you can check with your doctor or clinic.
- 10. IF YOU FORGET MORE THAN ONE PILL TWO MONTHS IN A ROW,** talk to your doctor or clinic about how to make pill-taking easier or about using another method of birth control.
- 11. THERE IS NO NEED TO STOP TAKING BIRTH CONTROL PILLS FOR A REST PERIOD.**
- 12. IF YOUR QUESTIONS ARE NOT ANSWERED HERE, CALL YOUR DOCTOR OR CLINIC.**

**WHEN TO START THE FIRST PACK OF PILLS**

**BE SURE TO READ THESE INSTRUCTIONS:**

- before you start taking your pills, and
- any time you are not sure what to do.

Decide with your doctor or clinic what is the best day for you to start taking your first pack of pills. Your pills may be either a 21-day or a 28-day type.

**DIRECTIONS FOR 21-DAY AND 28-DAY PILL PACKS**

- 1. THE FIRST DAY OF YOUR MENSTRUAL PERIOD (BLEEDING) IS DAY 1 OF YOUR CYCLE.** The pills may be started up to Day 6 of your cycle. Your starting day will be chosen in discussion with your doctor. You will always begin taking your pill on this day of the week. Your doctor may advise you to start taking the pills on Day 1, on Day 5, or on the first Sunday after your period begins. If your period starts on Sunday, start that same day.
- 2. IF YOU ARE USING A:**

**21-DAY Pill Pack:**  
With this type of birth control pill, you are on pills for 21 days and off pills for seven days. You must not be off the pills for more than seven days in a row.

Take one pill at approximately the same time every day for 21 days. **THEN DO NOT TAKE A PILL FOR SEVEN DAYS.** Start a new pack on the eighth

day. You will probably have a period during the seven days off the pill. (This bleeding may be lighter and shorter than your usual period.)

**28-DAY Pill Pack:**

With this type of birth control pill, you take 21 pills that contain hormones and seven pills that contain no hormones.

Take one pill at approximately the same time every day for 28 days. Begin a new pack the next day, **NOT MISSING ANY DAYS ON THE PILLS.** Your period should occur during the last seven days of using that pill pack.

**INSTRUCTIONS FOR USING YOUR DISCREET PACKAGE FOR BOTH 21-DAY AND 28-DAY PACKS. FOLLOW THESE INSTRUCTIONS CAREFULLY:**

- 1. For Day 1 start:** Label the DISCREET Package by selecting the day label that starts with Day 1 of your menstrual period (the first day of menstruation is Day 1). For example, if your first day of menstruation is Tuesday, attach the day label that begins with **TUE** in the space provided.

**OR**

**For Day 5 start:** Label the DISCREET Package by selecting the day label that starts with the day that is 5 days after your period begins. (Count 5 days including the first day of menstruation.) For example, if your first day of menstruation is Saturday, place the day label that starts with **WED** in the space provided.

**OR**

**For Sunday start:** No day label is required. The DISCREET Package is printed for a Sunday start. (The first Sunday **after** your period begins, or, if your period starts on Sunday, start that **same day**.)

- Place the day label in the space where you see the words "Place day label here". Having the DISCREET Package labelled with the days of the week will help remind you to take your pill every day.
- To begin taking your pills, start with the pill inside the red circle (where you see the word **START**). This pill should correspond to the day of the week that you are taking your first pill. To remove the pill, push through the back of the DISCREET Package.
- On the following day, take the next pill in the same row, always proceeding from left to right (→). Each row will always begin on the same day of the week.

**WHAT TO DO DURING THE MONTH**

- 1. TAKE A PILL AT APPROXIMATELY THE SAME TIME EVERY DAY UNTIL THE PACK IS**

**EMPTY.**

- Try to associate taking your pill with some regular activity such as eating a meal or going to bed.
- Do not skip pills even if you have bleeding between monthly periods or feel sick to your stomach (nausea).
- Do not skip pills even if you do not have sex very often.

**2. WHEN YOU FINISH A PACK**

- **21 PILLS**  
**WAIT SEVEN DAYS** to start the next pack. You will have your period during that week.
- **28 PILLS**  
Start the next pack **ON THE NEXT DAY**. Take one pill every day. Do not wait any days between packs.

**Overdose:**

Symptoms of overdose may include nausea, vomiting or vaginal bleeding. Available information from cases of accidental ingestion of oral contraceptives by children indicates no serious effects.

In case of drug overdose, contact a health care practitioner, hospital emergency department or regional Poison Control Centre immediately, even if there are no symptoms.

**WHAT TO DO IF YOU MISS PILLS**

The following chart outlines the actions you should take if you miss one or more of your birth control pills. Match the number of pills missed with the appropriate starting time for your type of pill pack.

<b>SUNDAY START</b>	<b>OTHER THAN SUNDAY START</b>
<b>MISS ONE PILL</b>	<b>MISS ONE PILL</b>
Take it as soon as you remember and take the next pill at the usual time. This means that you might take two pills in one day.	Take it as soon as you remember, and take the next pill at the usual time. This means that you might take two pills in one day.
<b>MISS TWO PILLS IN A ROW</b>	<b>MISS TWO PILLS IN A ROW</b>
<p><b>First Two Weeks</b></p> <ol style="list-style-type: none"> <li>1. Take two pills the day you remember and two pills the next day.</li> <li>2. Then take one pill a day until you finish the pack.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> </ol> <p><b>Third Week</b></p> <ol style="list-style-type: none"> <li>1. Keep taking one pill a day until Sunday.</li> <li>2. On Sunday, safely discard the rest of the pack and start a new pack that day.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>4. You may not have a period this month.</li> </ol> <p><b>If you miss two periods in a row, call your doctor or clinic.</b></p>	<p><b>First Two Weeks</b></p> <ol style="list-style-type: none"> <li>1. Take two pills the day you remember and two pills the next day.</li> <li>2. Then take one pill a day until you finish the pack.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> </ol> <p><b>Third Week</b></p> <ol style="list-style-type: none"> <li>1. Safely dispose of the rest of the pill pack and start a new pack that same day.</li> <li>2. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>3. You may not have a period this month.</li> </ol> <p><b>If you miss two periods in a row, call your doctor or clinic.</b></p>
<b>MISS THREE OR MORE PILLS IN A ROW</b>	<b>MISS THREE OR MORE PILLS IN A ROW</b>
<p><b>Any Time in the Cycle</b></p> <ol style="list-style-type: none"> <li>1. Keep taking one pill a day until Sunday.</li> <li>2. On Sunday, safely discard the rest of the pack and start a new pack that day.</li> <li>3. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>4. You may not have a period this month.</li> </ol> <p><b>If you miss two periods in a row, call your doctor or clinic.</b></p>	<p><b>Any Time in the Cycle</b></p> <ol style="list-style-type: none"> <li>1. Safely dispose of the rest of the pill pack and start a new pack that same day.</li> <li>2. Use a back-up method of birth control if you have sex in the seven days after you miss the pills.</li> <li>3. You may not have a period this month.</li> </ol> <p><b>If you miss two periods in a row, call your doctor or clinic.</b></p>

**NOTE: 28-DAY PACK** – If you forget any of the seven "reminder" pills (without hormones) in Week 4, just safely dispose of the pills you missed. Then keep taking one pill each day until the pack is empty. You do not need to use a back-up method.

Always be sure you have on hand:

- a back-up method of birth control (such as latex condoms and spermicidal foam or gel) in case you miss pills, and
- an extra, full pack of pills.

**IF YOU FORGET MORE THAN ONE PILL TWO MONTHS IN A ROW, TALK TO YOUR DOCTOR OR CLINIC** about ways to make pill-taking easier or about using another method of birth control.

**NON-CONTRACEPTIVE BENEFITS OF BIRTH CONTROL PILLS**

Several health advantages have been linked to the use of birth control pills.

- Combination estrogen and progestin birth control pills reduce the incidence of cancer of the uterus and ovaries.
- Birth control pills reduce the likelihood of developing benign (non-cancerous) breast disease and ovarian cysts.
- Users of birth control pills lose less menstrual blood and have more regular cycles. The risk of developing iron-deficiency anemia is thus reduced.
- There may be a decrease in painful menstruation and premenstrual syndrome (PMS).
- Acne, excessive hair growth and male hormone-related disorders also may be improved.
- Ectopic (tubal) pregnancy may occur less frequently.
- Acute pelvic inflammatory disease may occur less frequently.

**SIDE EFFECTS AND WHAT TO DO ABOUT THEM**

Some users of birth control pills have unpleasant side effects. These side effects are temporary and are not hazardous to health.

There may be tenderness of the breasts, nausea and vomiting. Some users will experience weight gain or loss. Many of these side effects occurred with high-dose combination birth control pills. These side effects are less common with the low-dose pills prescribed today.

Unexpected vaginal bleeding or spotting and changes in the usual menstrual period also may occur. These side effects usually disappear after the first few cycles. They are NOT an indication to stop taking birth control pills. Unless more significant complications occur, a decision to stop using the pill or to change the brand of pill should be made only after three consecutive months of use. Occasionally, users develop high blood pressure that may

require stopping the use of birth control pills.

The following additional symptoms have been reported in women taking hormonal contraceptives in general:

- difficulty wearing contact lenses
- vaginal irritation or infections
- urinary tract infections or inflammation
- upper respiratory tract infections (colds, bronchitis, runny or stuffy nose, sore throat, etc)
- severe headaches
- insomnia
- amenorrhea (lack of a period or breakthrough bleeding)
- flu-like symptoms
- allergy, fatigue, fever
- diarrhea, flatulence

A woman's menstrual period may be delayed after stopping birth control pills. There is no evidence that the use of the pill leads to a decrease in fertility. As mentioned, it is wise to delay starting a pregnancy for one menstrual period after stopping birth control pills.

<b>SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM</b>				
Symptom/effect		Talk with your doctor or pharmacist		Stop taking drug and call your doctor or pharmacist
		Only if severe	In all cases	
Un-common	Abdominal pain, nausea or vomiting or lump in the abdomen		✓	
	Breast lump		✓	
	Crushing chest pain or heaviness			✓
	Pain or swelling in the leg			✓
	Persistent sad mood			✓
	Sharp pain in the chest, coughing blood, or sudden shortness of breath			✓
	Sudden partial or complete loss of vision or double vision			✓

**SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM**

Symptom/effect		Talk with your doctor or pharmacist		Stop taking drug and call your doctor or pharmacist
		Only if severe	In all cases	
Un-common	Sudden severe headache or worsening of headache, vomiting, dizziness, fainting, disturbance of vision or speech, or weakness or numbness in the face, arm or leg			✓
	Unexpected vaginal bleeding		✓	
	Unusual swelling of the extremities		✓	
	Yellowing of the skin or eyes (jaundice)			✓

**HOW TO STORE IT**

Store in original packaging, between 15°C - 25°C. Keep out of the reach of children.

**REPORTING SUSPECTED SIDE EFFECTS**

You can report any suspected adverse reactions associated with the use of health products to the Canada Vigilance Program by one of the following 3 ways:

- Report online at [www.healthcanada.gc.ca/medeffect](http://www.healthcanada.gc.ca/medeffect)
- Call toll-free at 1-866-234-2345
- Complete a Canada Vigilance Reporting Form and:
  - Fax toll-free to 1-866-678-6789, or
  - Mail to: Canada Vigilance Program  
Health Canada  
Postal Locator 0701D  
Ottawa, ON K1A 0K9

Postage paid labels, Canada Vigilance Reporting Form and the adverse reaction reporting guidelines are available on the MedEffect™ Canada Web site at [www.healthcanada.gc.ca/medeffect](http://www.healthcanada.gc.ca/medeffect).

**NOTE: Should you require information related to the management of side effects, contact your health professional. The Canada Vigilance Program does not provide medical advice.**

**MORE INFORMATION**

This document plus the full product monograph, prepared for health professionals, can be found at:  
<http://www.janssen.ca>  
or by contacting the sponsor, Janssen Inc., at:  
1-800-567-3331

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