

AUSTRALIAN PRODUCT INFORMATION

KLIOVANCE®

estradiol 1 mg (as hemihydrate) and norethisterone acetate 0.5 mg tablet dial dispenser pack

WARNING

Estrogens and progestagens should not be used for the prevention of cardiovascular disease or dementia.

The Women's Health Initiative (WHI) study reported increased risks of myocardial infarction, stroke, invasive breast cancer, pulmonary emboli, and deep vein thrombosis in postmenopausal women (50 to 79 years of age) during 5 years of treatment with conjugated estrogens (0.625 mg) combined with medroxyprogesterone acetate (2.5 mg) relative to placebo (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials' and 'Section 4.4 Special Warnings and Precautions for Use').

The WHI study reported increased risks of stroke and deep vein thrombosis in postmenopausal women (50 to 79 years of age) during 6.8 years of treatment with conjugated estrogens (0.625 mg) relative to placebo (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials' and 'Section 4.4 Special Warnings and Precautions for Use').

The Women's Health Initiative Memory Study (WHIMS), a substudy of WHI, reported increased risk of developing probable dementia in postmenopausal women 65 years of age or older during 4 to 5.2 years of treatment with conjugated estrogens, with or without medroxyprogesterone acetate, relative to placebo. It is unknown whether this finding applies to younger postmenopausal women (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials' and 'Section 4.4 Special Warnings and Precautions for Use').

Other doses of conjugated estrogens and medroxyprogesterone acetate, and other combinations and dosage forms of estrogens and progestagens were not studied in the WHI clinical trials and, in the absence of comparable data, these risks should be assumed to be similar. Because of these risks, estrogens with or without progestagens should be prescribed at the lowest effective doses and for the shortest duration consistent with treatment goals and risks for the individual woman.

1. NAME OF THE MEDICINE

Estradiol hemihydrate and norethisterone acetate

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Kliovance® is a continuous combined estrogen/progestagen preparation comprising 28 tablets. Each Kliovance tablet contains 1 mg estradiol (as hemihydrate) and 0.5 mg norethisterone acetate. The estrogen in Kliovance substitutes for the loss of endogenous

estrogen production in postmenopausal women. The progestagen protects the endometrium from estrogen-induced hyperstimulation. Kliovance is intended to avoid monthly withdrawal bleeding associated with sequential hormone replacement therapy (HRT) regimens.

Excipient with known effect: lactose monohydrate. For the full list of excipients, see ‘Section 6.1 List of Excipients.’

3. PHARMACEUTICAL FORM

Film coated tablet.

White, biconvex, film-coated tablets marked NOVO 288 on one side, the Novo Nordisk logo (Apis bull) on the other side, with a diameter of 6 mm.

4. CLINICAL PARTICULARS

4.1 Therapeutic Indications

1. Short term treatment of menopausal symptoms related to estrogen deficiency in women more than one year after menopause (see ‘Section 4.2 Dose and Method of Administration’ and ‘Section 5.1 Pharmacodynamic Properties’ - ‘Clinical trials’).
2. For the prevention of postmenopausal bone mineral density loss.

When prescribed solely for the prevention of postmenopausal bone mineral density loss, therapy should only be prescribed for women who are at high risk of osteoporosis and future fracture and who are intolerant of, or contraindicated for, non-estrogen products approved for prevention of osteoporosis. Life style modifications and the risk benefit profiles of Kliovance should be taken into careful consideration and discussed with the patient, to allow the patient to make an informed decision prior to prescribing, see ‘Section 4.4 Special Warnings and Precautions for Use’ and ‘Section 4.2 Dose and Method of Administration’.

4.2 Dose and Method of Administration

Dosage

Kliovance is a continuous-combined HRT product intended for use in women with an intact uterus.

Kliovance should be used primarily in women after one year of amenorrhoea.

Relief of menopausal symptoms is achieved during the first few weeks of treatment in the majority of women. A switch to a higher dose combination product could be indicated if the response after 3 months is insufficient for satisfactory symptom relief. If symptoms such as hot flushes have ceased, consideration of transferring to local vaginal treatment should be given if troublesome local symptoms remain.

The mainstays for decreasing the risk of postmenopausal osteoporosis are weight bearing exercise, adequate calcium and vitamin D intake, and, when indicated, pharmacological therapy. Postmenopausal women require an adequate daily intake of elemental calcium. Therefore, when not contraindicated, calcium supplementation may be helpful for women with sub-optimal dietary intake. Vitamin D supplementation may also be required to ensure adequate daily intake in postmenopausal women.

In women with amenorrhoea and not taking HRT or women in transition from another continuous combined HRT product, treatment with Kliovance may be started on any convenient day. In women in transition from a sequential HRT regimen, treatment should start right after their withdrawal bleeding has ended.

Duration of therapy

HRT should be prescribed at the lowest effective dose and for the shortest duration (see 'Section 4.4 Special Warnings and Precautions for Use'). The continuation of the treatment should be re-evaluated annually. Women who have undergone a premature menopause may require longer term treatment.

Method of Administration

One tablet should be taken orally once a day without interruption, preferably at the same time each day.

If the patient has forgotten to take a tablet, the tablet should be taken as soon as possible within the next twelve hours. If more than 12 hours have passed the tablet should be discarded. Forgetting a dose may increase the likelihood of breakthrough bleeding and spotting.

Use of the calendar pack

The first tablet to be taken is under the sealed opening in the transparent outer rim of the pack. Turn the inner disc of the pack until the day of the week on which the first tablet is to be taken is opposite the sealed opening. Lift off the plastic seal with a finger-nail and remove the first tablet from the pack. Each day, turn the transparent outer rim of the pack in the direction of the arrow to obtain the next tablet. The transparent outer rim can only be turned after the tablet in the opening has been removed. Continue until all tablets have been taken.

4.3 Contraindications

- Known, suspected or past history of breast cancer
- Known, suspected or past history of estrogen dependent neoplasia eg: endometrial cancer
- Untreated endometrial hyperplasia
- Genital bleeding of unknown aetiology
- Previous or current venous thromboembolism (deep venous thrombosis, pulmonary embolism)
- Known thrombophilic disorders (e.g. protein C, protein S, or antithrombin deficiency (see 'Section 4.4 Special Warnings and Precautions for Use'))
- Active or previous arterial thromboembolic disease (e.g. angina, myocardial infarction)
- Acute liver disease or a history of liver disease as long as liver function tests have failed to return to normal
- Known hypersensitivity to the active ingredients or any of the excipients.
- Porphyria
- Known or suspected pregnancy or lactation
- Chronic renal failure.

4.4 Special Warnings and Precautions for Use

For the treatment of postmenopausal symptoms, HRT should only be initiated for symptoms that adversely affect quality of life. The benefits and risks of estrogen/progestagen therapy must always be carefully weighed, including consideration of the emergence of risks as therapy continues. A careful appraisal of the risks and benefits should be undertaken at least annually and HRT should only be continued as long as the benefit outweighs the risk.

Evidence regarding the risks associated with HRT in the treatment of premature menopause is limited.

Kliovance has no contraceptive effect.

Kliovance tablets contain lactose monohydrate. Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency, or glucose-galactose malabsorption should not take this medicine.

The toxicity profiles of estradiol and norethisterone acetate are well known. There are no preclinical data of relevance to the prescriber which are additional to that already included in other sections of the Product Information.

Medical examination/follow-up

Before initiating or reinstating HRT, a complete personal and family medical history should be taken. Physical (including pelvic and breast) examinations should be guided by this and by the contraindications and warnings for use. During treatment periodic check-ups are recommended of a frequency and nature adapted to the individual woman. Women should be advised what changes in their breasts should be reported to their doctor or nurse (please see the 'Breast Cancer' section below). Investigations, including appropriate imaging tools e.g. mammography, should be carried out in accordance with currently accepted screening practices, modified to the clinical needs of the individual.

Conditions which need supervision

If any of the following conditions are present, have occurred previously, and/or have been aggravated during pregnancy or previous hormone treatment, the patient should be closely supervised. It should be taken into account that these conditions may recur or be aggravated during treatment with Kliovance, in particular:

- Leiomyoma (uterine fibroids) or endometriosis
- Risk factors for, thromboembolic disorders (see below)
- Risk factors for estrogen dependent tumours e.g. 1st degree heredity for breast cancer
- Hypertension
- Liver disorders (e.g. liver adenoma, hepatic haemangioma)
- Diabetes mellitus with or without vascular involvement
- Cholelithiasis
- Migraine or (severe) headache
- Systemic lupus erythematosus
- A history of endometrial hyperplasia (see below)
- Epilepsy
- Asthma
- Otosclerosis.

Estrogens may be poorly metabolised in patients with impaired liver function. For patients with a history of cholestatic jaundice associated with past estrogen use or with pregnancy, caution should be exercised and in the case of recurrence, medication should be discontinued.

Reasons for immediate withdrawal of therapy

Therapy should be discontinued in case a contra-indication is discovered and in the following situations:

- Jaundice or deterioration in liver function

- Significant increase in blood pressure
- New onset of migraine-type headache
- Pregnancy.

Malignant neoplasms

Endometrial hyperplasia and carcinoma

In humans, unopposed estrogen therapy is associated with an increased risk of endometrial hyperplasia and endometrial carcinoma, particularly with prolonged use. This risk is reduced by the addition of progestagens, in adequate doses and appropriate duration.

The reported endometrial cancer risk among unopposed estrogen users is about 2- to 12-fold greater than in nonusers, and appears dependent on duration of treatment and on estrogen dose (see ‘Section 4.8 Adverse Effects (Undesirable Effects)’). Most studies show no significant increased risk associated with the use of estrogens for less than one year. The greatest risk appears associated with prolonged use, with increased risks of 15- to 24-fold for five to ten years or more, and this risk has been shown to persist for at least 8 to 15 years after estrogen therapy is discontinued.

Clinical surveillance of all women taking estrogen/progestagen combinations is important. Adequate diagnostic measures, including endometrial sampling when indicated, should be undertaken to rule out malignancy in all cases of undiagnosed persistent or recurring abnormal vaginal bleeding. There is no evidence that the use of natural estrogens results in a different endometrial risk profile than synthetic estrogens of equivalent estrogen dose.

Endometrial hyperplasia (a possible precursor of endometrial cancer) has been reported to occur at a rate of approximately 1% or less with CE + MPA in two large clinical trials. In the two large clinical trials described above, two cases of endometrial cancer were reported to occur among women taking the estrogen/progestagen combination therapy.

Breast cancer

The use of estrogen-only HRT and combine estrogen-progestagen by women has been shown to increase the risk of breast cancer, that is dependent on the duration of taking HRT.

Combined estrogen-progestagen therapy:

The randomised placebo-controlled trial, the Women’s Health Initiative study (WHI), and a meta-analysis of prospective epidemiological studies are consistent in finding an increased risk of breast cancer in women taking combined estrogen-progestogen for HRT that becomes apparent after about 3 (1-4) years (see ‘Section 4.8 Adverse Effects (Undesirable Effects)’).

Estrogen only therapy:

The WHI trial found no increase in the risk of breast cancer in hysterectomised women using estrogen-only HRT. Observational studies have mostly reported a small increase in risk of having breast cancer diagnosed that is lower than that found in users of estrogen-progestagen combinations (see ‘Section 4.8 Adverse Effects (Undesirable Effects)’).

Results from a large meta-analysis showed that after stopping treatment, the excess risk will decrease with time and the time needed to return to baseline depends on the duration of prior HRT use. When HRT was taken for more than 5 years, the risk may persist for 10 years or more.

The observational Million Women Study in Europe reported an increased risk of mortality due to breast cancer among current users of estrogens alone or estrogens plus progestagens compared to never users, while the estrogen plus progestagen substudy of WHI showed no effect on breast cancer mortality with a mean follow-up of 5.6 years.

All women should receive yearly breast examinations by a healthcare provider and perform monthly breast self-examinations. In addition, mammography examinations should be scheduled based on patient age, risk factors, and prior mammogram results. The use of estrogen plus progestagen has been reported to result in an increase in abnormal mammograms requiring further evaluation. Mammographic density may be increased after the use of combined HT. This may have implications for the sensitivity and specificity of breast cancer screening.

Breast status should also be closely monitored in women with a history of or known breast nodules, fibrocystic disease, or with a family history of breast cancer.

Although obese women are at an increased risk of having breast cancer, HRT did not further increase this risk.

Combination HRT should not be used in hysterectomised women because it is not needed in these women and it may increase the risk of breast cancer.

Ovarian cancer

Ovarian cancer is much rarer than breast cancer.

The estrogen plus progestagen substudy of WHI reported that, after an average follow-up of 5.6 years, the relative risk of ovarian cancer for estrogen plus progestagen versus placebo was 1.58 (95% confidence interval 0.77 – 3.24) but was not statistically significant. The absolute risk for estrogen plus progestagen versus placebo was 4.2 versus 2.7 cases per 10,000 women-years. Epidemiological evidence from a large meta-analysis suggests a slightly increased risk in women taking estrogen-only or combined estrogen-progestagen HRT, which becomes apparent within 5 years of use and diminishes over time after stopping. Some other studies, including the WHI trial, suggest that use of combined HRTs may be associated with a similar or slightly smaller risk (see ‘Section 4.8 Adverse Effects (Undesirable Effects)’).

Cardiovascular disorders

Estrogen/progestagen therapy has been associated with an increased risk of cardiovascular events such as myocardial infarction and stroke, as well as venous thrombosis and pulmonary embolism (venous thromboembolism or VTE). Should any of these occur or be suspected, estrogen/progestagen therapy should be discontinued immediately (see ‘Section 4.3 Contraindications.’)

Risk factors for arterial vascular disease (e.g., hypertension, diabetes mellitus, tobacco use, hypercholesterolaemia, and obesity) and/or venous thromboembolism (e.g., personal history or family history of VTE, use of estrogens, older age, major surgery, prolonged immobilisation, obesity, pregnancy/postpartum period, cancer and systemic lupus erythematosus) should be managed appropriately.

Coronary heart disease and stroke

In the estrogen plus progestagen substudy of the Women's Health Initiative (WHI) study, an increased risk of coronary heart disease (CHD) events (defined as nonfatal myocardial infarction and CHD death) was observed in women receiving CE + MPA compared to women receiving placebo (37 vs 30 per 10,000 women-years). The increase in risk was observed in year one and persisted (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials').

In the same substudy of WHI, an increased risk of stroke was observed in women receiving estrogen/progestagen compared to women receiving placebo (29 vs. 21 per 10,000 women-years). The increase in risk was observed after the first year and persisted. In postmenopausal women with documented heart disease (n = 2,763, average age 66.7 years) a controlled clinical trial of secondary prevention of cardiovascular disease (Heart and Estrogen/progestin Replacement Study; HERS) treatment with CE + MPA demonstrated no cardiovascular benefit. During an average follow-up of 4.1 years, treatment with CE + MPA did not reduce the overall rate of CHD events in postmenopausal women with established coronary heart disease. There were more CHD events in the estrogen/progestagen-treated group than in the placebo group in year 1, but not during the subsequent years. Two thousand three hundred and twenty one women from the original HERS trial agreed to participate in an open label extension of HERS, HERS II. Average follow-up in HERS II was an additional 2.7 years, for a total of 6.8 years overall. Rates of CHD events were comparable among women in the estrogen/progestagen-treated group and the placebo group in HERS, HERS II, and overall.

Venous thromboembolism (VTE)

In the estrogen plus progestagen substudy of WHI, a 2-fold greater rate of VTE, including deep venous thrombosis and pulmonary embolism, was observed in women receiving CE + MPA compared to women receiving placebo. The rate of VTE was 34 per 10,000 women-years in the estrogen/progestagen-treated group compared to 16 per 10,000 women-years in the placebo group. The increase in VTE risk was observed during the first year and persisted (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials').

HRT is associated with a 1.3- to 3-fold risk of developing VTE i.e. deep vein thrombosis or pulmonary embolism. The occurrence of such an event is more likely in the first year of HRT than later (see 'Section 4.8 Adverse Effects (Undesirable Effects)').

Patients with known thrombophilic states have an increased risk of VTE and HRT may add to this risk. HRT is therefore contraindicated in these patients (see 'Section 4.3 Contraindications').

Generally recognised risk factors for VTE include use of estrogens, older age, major surgery, prolonged immobilisation, obesity (BMI > 30 kg/m²), pregnancy/postpartum period, systemic lupus erythematosus (SLE) and cancer. There is no consensus about the possible role of varicose veins in VTE.

As in all postoperative patients, prophylactic measures need to be considered to prevent VTE following surgery. HRT should be discontinued at least 4 to 6 weeks before surgery of the type associated with an increased risk of thromboembolism, or during periods of prolonged immobilisation. Treatment should not be restarted until the woman is completely mobilised.

In women with no personal history of VTE but with a first degree relative with a history of thrombosis at a young age, screening may be offered after careful counselling regarding its limitations (only a proportion of thrombophilic defects are identified by screening).

If a thrombophilic defect is identified which segregates with thrombosis in family members, or if the defect is 'severe' (e.g. antithrombin, protein S or protein C deficiencies, or a combination of defects), HRT is contraindicated.

Women already on chronic anticoagulant treatment require careful consideration of the benefit-risk of using HRT.

If VTE develops after initiating therapy, the drug should be discontinued. Patients should be told to contact their doctors immediately when they are aware of a potential thromboembolic symptom (e.g. painful swelling of a leg, sudden pain in the chest, dyspnoea).

Dementia

HRT use does not improve cognitive function. In the Women's Health Initiative Memory Study (WHIMS), an ancillary study of WHI, a population of 4,532 women aged 65 to 79 years was randomised to CE + MPA or placebo. A population of 2,947 hysterectomised women, aged 65 to 79 years, was randomised to CE alone or placebo. In the planned analysis, pooling the events in women receiving CE alone or CE + MPA in comparison to those in women on placebo, the overall relative risk (RR) for probable dementia was 1.76 (95% CI 1.19-2.60). In the estrogen-alone group, after an average follow-up of 5.2 years a RR of 1.49 (95% CI 0.83-2.66) for probable dementia was observed compared to placebo. In the estrogen plus progestagen group, after an average follow-up of 4 years, a RR of 2.05 (95% CI 1.21-3.48) for probable dementia was observed compared to placebo. Since this study was conducted in women aged 65 to 79 years, it is unknown whether these findings apply to younger postmenopausal women (see 'Section 4.4 Special Warnings and Precautions for Use' – 'Use in the elderly').

Gallbladder disease

A 2- to 4-fold increase in the risk of gallbladder disease requiring surgery in postmenopausal women receiving estrogens has been reported.

Hypercalcaemia

Estrogen administration may lead to severe hypercalcaemia in patients with breast cancer and bone metastases. If hypercalcaemia occurs, use of the drug should be stopped and appropriate measures taken to reduce the serum calcium level.

Visual Abnormalities

Retinal vascular thrombosis has been reported in patients receiving estrogens. Discontinue medication pending examination if there is sudden partial or complete loss of vision, or a sudden onset of proptosis or diplopia. If examination reveals papilloedema or retinal vascular lesions, estrogens should be discontinued.

General precautions

Addition of a progestagen when a woman has not had a hysterectomy

Studies of the addition of a progestagen for 10 or more days of a cycle of estrogen administration, or daily with estrogen in a continuous regimen, have reported a lowered incidence of endometrial hyperplasia than would be induced by estrogen treatment alone. Endometrial hyperplasia may be a precursor to endometrial cancer.

There are, however, possible risks that may be associated with the use of progestagens with estrogens compared with estrogen-alone regimens. These include a possible increased risk of breast cancer, adverse effects on lipoprotein metabolism (e.g. lowering HDL, raising LDL) and impairment of glucose tolerance.

Hypertriglyceridaemia

In patients with pre-existing hypertriglyceridaemia, estrogen therapy may be associated with elevations of plasma triglycerides leading to pancreatitis and other complications.

Hypothyroidism

Estrogen administration leads to increased thyroid-binding globulin (TBG) levels. Patients with normal thyroid function can compensate for the increased TBG by making more thyroid hormone, thus maintaining free T₄ and T₃ serum concentrations in the normal range. Patients dependent on thyroid hormone replacement therapy who are also receiving estrogens may require increased doses of their thyroid replacement therapy. These patients should have their thyroid function monitored in order to maintain their free thyroid hormone levels in an acceptable range.

Fluid retention

Estrogens may cause fluid retention, and therefore patients with cardiac or renal dysfunction should be carefully observed. Patients with terminal renal insufficiency should be closely observed, since it is expected that the level of circulating active ingredients in Kliovance will increase.

Hypocalcaemia

Estrogens should be used with caution in individuals with severe hypocalcaemia.

Exacerbation of endometriosis

Endometriosis may be exacerbated with administration of estrogen therapy.

Angioedema

Estrogens may induce or exacerbate symptoms of angioedema, in particular in women with hereditary angioedema.

Use in elderly

The experience of treating women older than 65 years' is limited. Pharmacokinetics in the elderly have not been studied.

Of the total number of subjects in the estrogen plus progestagen substudy of the Women's Health Initiative study, 44% (n = 7320) were 65 years and over, while 6.6% (n = 1,095) were 75 years and over (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials'). There was a higher incidence of stroke and invasive breast cancer in women 75 and over compared to women less than 75 years of age.

In the Women's Health Initiative Memory Study (WHIMS), an ancillary study of WHI, a population of 4,532 women aged 65 to 79 years was randomised to a continuous combined regimen of conjugated estrogens 0.625 mg/day plus medroxyprogesterone acetate 2.5 mg/day or placebo. A population of 2,947 hysterectomised women, aged 65 to 79 years, was randomised to conjugated estrogens (CE 0.625 mg) or placebo. In the planned analysis,

pooling the events in women receiving CE or CE + MPA in comparison to those in women on placebo, the overall relative risk (RR) for probable dementia was 1.76 (95% CI 1.19-2.60). In the estrogen-alone group, after an average follow-up of 5.2 years a RR of 1.49 (95% CI 0.83-2.66) for probable dementia was observed compared to placebo. In the estrogen plus progestagen group, after an average follow-up of 4 years, a RR of 2.05 (95% CI 1.21-3.48) for probable dementia was observed compared to placebo. Since this study was conducted in women aged 65 to 79 years, it is unknown whether these findings apply to younger postmenopausal women (see 'Section 4.4 Special Warnings and Precautions for Use' - 'Dementia').

With respect to efficacy in the approved indications, there have not been sufficient numbers of geriatric patients involved in studies utilising estrogens and progestagens to determine whether those over 65 years of age differ from younger subjects in their response to estrogens and progestagens.

Paediatric use

No data available.

Effects on laboratory tests

Some laboratory tests may be influenced by estrogen therapy, such as tests for glucose tolerance or thyroid function.

4.5 Interaction with Other Medicines and Other Form of Interactions

The metabolism of estrogens and progestagens may be increased by concomitant use of substances known to induce drug-metabolising enzymes, specifically cytochrome P450 enzymes, such as barbiturates (e.g. phenobarbital), anticonvulsants (e.g. phenytoin, carbamazepin), antihistamines, phenylbutazone and some anti-infectives (e.g. rifampicin, rifabutin, nevirapine, efavirenz). Ritonavir, telaprevir and nelfinavir, although known as strong inhibitors, by contrast exhibit inducing properties when used concomitantly with steroid hormones. Herbal preparations containing St. John's Wort (*Hypericum perforatum*) may induce the metabolism of estrogens and progestagens.

Clinically, an increased metabolism of estrogens and progestagens may lead to decreased effect and changes in the uterine bleeding profile.

Drugs that inhibit the activity of hepatic microsomal drug metabolising enzymes e.g.: ketoconazole, may increase circulating levels of the active substances in Kliovance.

Estrogens can also affect the actions of other drugs e.g. anticoagulants, antidiabetic agents, antifibrinolytic agents, pethidine, drugs which decrease serum folate, imipramine, thyroid hormones and corticosteroids.

Oral contraceptives (OC) containing ethinylestradiol have been shown to significantly decrease plasma concentrations of lamotrigine when co-administered. Similar interaction may exist between HRT containing estradiol and lamotrigine. Therefore, dosage adjustment of lamotrigine may be necessary for seizure control. Concomitant administration of cyclosporin and Kliovance may cause increased blood levels of cyclosporin, creatinine and transaminases due to decreased metabolism of cyclosporin in the liver.

4.6 Fertility, Pregnancy and Lactation

Effects on fertility

No data available.

Use in pregnancy

Category D. Known or suspected pregnancy is a contraindication to Kliovance therapy.

In animal studies, maternal administration of high doses of estrogens has produced urogenital malformations in the offspring. The relevance of these animal findings for the clinical use of estradiol is uncertain, but is considered likely to be low. Animal studies have also shown that high doses of progestagens can cause masculinisation of the female foetus.

Clinically, data on a limited number of pregnancies indicate adverse effects of norethisterone on the fetus. At doses higher than normally used in OC and HRT formulations, masculinisation of female fetuses was observed.

The results of most epidemiological studies to date relevant to inadvertent fetal exposure to combinations of estrogens and progestagens indicate no teratogenic or fetotoxic effect.

Use in lactation

Kliovance is not indicated during lactation.

4.7 Effects on Ability to Drive and Use Machines

The effects of this medicine on a person's ability to drive and use machines were not assessed as part of its registration.

4.8 Adverse Effects (Undesirable Effects)

Clinical experience

The most frequently reported adverse events in the clinical trials with Kliovance were vaginal bleeding and breast pain/tenderness, reported in approximately 10% to 20% of patients. Vaginal bleeding usually occurred in the first months of treatment. Breast pain usually disappeared after a few months of therapy.

Adverse reactions observed with a higher frequency in patients treated with Kliovance as compared to placebo, and which on an overall judgement are considered possibly or probably related to treatment, are presented below, see also 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials' and 'Section 4.4 Special Warnings and Precautions for Use'.

Table 1

System organ class	Very common ≥1/10	Common ≥1/100; <1/10	Uncommon ≥1/1,000; <1/100	Rare ≥1/10,000; <1/1,000
Infections and infestations		Genital candidiasis or vaginitis, see also 'Reproductive system and breast disorders'		
Immune system disorders			Hypersensitivity, see also 'Skin and	

System organ class	Very common ≥1/10	Common ≥1/100; <1/10	Uncommon ≥1/1,000; <1/100	Rare ≥1/10,000; <1/1,000
			subcutaneous tissue disorders'	
Metabolism and nutrition disorders		Fluid retention, see also 'General disorders and administration site conditions'		
Psychiatric disorders		Depression or depression aggravated	Nervousness	
Nervous system disorders		Headache, dizziness, insomnia, migraine or migraine aggravated		
Vascular disorders		Blood pressure increase	Thrombophlebitis superficial Venous thromboembolism	Pulmonary embolism Deep venous thromboembolism
Gastrointestinal disorders		Nausea Abdominal pain, dyspepsia Flatulence or bloating	Abdominal distension or abdominal discomfort Vomiting Gallbladder disease, gallstones	
Skin and subcutaneous tissue disorders		Rash Pruritus	Alopecia, hirsutism or acne Urticaria	
Musculoskeletal, connective tissue and bone disorders		Back pain	Leg cramps	
Reproductive system and breast disorders	Breast pain or breast tenderness Vaginal haemorrhage	Breast oedema or breast enlargement Uterine fibroids aggravated or uterine fibroids recurrence or uterine fibroids		
General disorders and administration site conditions		Oedema peripheral	Drug ineffective	

System organ class	Very common ≥1/10	Common ≥1/100; <1/10	Uncommon ≥1/1,000; <1/100	Rare ≥1/10,000; <1/1,000
Investigations		Weight increased or decreased	Change in libido	

Endometrial cancer

In women with an intact uterus, the risk of endometrial hyperplasia and endometrial cancer increases with increasing duration of use of unopposed estrogens. According to data from epidemiological studies, the best estimate of the risk is that for women not using HRT, about 5 in every 1000 are expected to have endometrial cancer diagnosed between the ages of 50 and 65. Depending on the duration of treatment and estrogen dose, the reported increase in endometrial cancer risk among unopposed estrogen users varies from 2- to 12-fold greater compared with non-users. Adding a progestagen to estrogen-only therapy greatly reduces this increased risk.

Ovarian cancer

Use of estrogen-only or combined estrogen-progestagen HRT has been associated with a slightly increased risk of having ovarian cancer diagnosed (see ‘Section 4.4 Special Warnings and Precautions for Use’). A meta-analysis from 52 epidemiological studies reported an increased risk of ovarian cancer in women currently using HRT compared to women who have never used HRT (RR 1.43, 95% CI 1.31-1.56). For women aged 50 to 54 years taking 5 years’ of HRT, this results in about 1 extra case per 2,000 users. In women aged 50 to 54 years who are not taking HRT, about 2 women in 2,000 will be diagnosed with ovarian cancer over a 5-year period.

Post-marketing experience

In addition to the above mentioned adverse drug reactions, those presented below have been spontaneously reported, and are by an overall judgement considered possibly related to treatment with Kliogest. The reporting rate of these spontaneous adverse drug reactions is very rare (<1/10,000, not known (cannot be estimated from the available data)). Post-marketing experience is subject to underreporting especially with regard to trivial and well known adverse drug reactions. The presented frequencies should be interpreted in that light:

- Neoplasms benign and malignant (including cysts and polyps): Endometrial cancer
- Immune system disorders: generalised hypersensitivity reactions (e.g. anaphylactic reaction/shock)
- Psychiatric disorders: Insomnia, anxiety, libido decreased, libido increased
- Nervous system disorders: Dizziness, stroke
- Eye disorders: Visual disturbances
- Vascular disorders: Hypertension aggravated
- Cardiac disorders: myocardial infarction
- Gastrointestinal disorders: Dyspepsia, vomiting
- Hepatobiliary disorders: Gallbladder disease, cholelithiasis, cholelithiasis aggravated, cholelithiasis recurrence
- Skin and subcutaneous tissue disorders: Seborrhoea, rash, angioedema
- Reproductive system and breast disorders: Endometrial hyperplasia, vulvovaginal pruritus

- Investigations: Weight decreased, blood pressure increased.

The following adverse reactions have been reported in association with estrogen/progestagen treatment:

- Skin and subcutaneous disorders: alopecia, chloasma, erythema multiforme, erythema nodosum, vascular purpura
- Probable dementia (see ‘Section 4.4 Special Warnings and Precautions for Use’)
- Gastrointestinal disorders: Crohn’s disease, ulcerative colitis
- Dry eyes
- Tear film composition changes.

Breast cancer risk

An up to 2-fold increased risk of having breast cancer diagnosed is reported in women taking combined estrogen-progestagen therapy for more than 5 years. The increased risk in users of estrogen-only therapy is lower than that seen in users of estrogen-progestagen combinations. The level of risk is dependent on the duration of use (see ‘Section 4.4 Special Warnings and Precautions for Use’).

Absolute risk estimations based on results of the largest randomised placebo-controlled trial (WHI-study) and the largest meta-analysis of prospective epidemiological studies are presented below.

Table 2 Million Women Study – Estimated additional risk of breast cancer after 5 years’ use

Age at starting HRT (years)	Incidence per 1000 never-users of HRT over a 5 year period (50-54 years)*	Risk ratio	Additional cases per 1000 HRT users after 5 years’
Estrogen-only HRT			
50	13.3	1.2	2.7
Combined estrogen-progestagen			
50	13.3	1.6	8.0
* Taken from baseline incidence rates in England in 2015 in women with BMI 27 (kg/m ²).			
Note: Since the background incidence of breast cancer differs by EU country, the number of additional cases of breast cancer will also change proportionately.			

Table 3 Estimated additional risk of breast cancer after 10 years’ use in women with BMI 27 (kg/m²)

Age at starting HRT (years)	Incidence per 1,000 never users of HRT over a 10 year period (50-59 years)*	Risk ratio	Additional cases per 1,000 HRT users after 10 years
Estrogen-only HRT			
50	26.6	1.3	7.1
Combined estrogen-progestagen			
50	26.6	1.8	20.8
* Taken from baseline incidence rates in England in 2015 in women with BMI 27 (kg/m ²).			
Note: Since the background incidence of breast cancer differs by EU country, the number of additional cases of breast cancer will also change proportionately.			

Table 4 US WHI studies – Additional risk of breast cancer after 5 years’ use

Age range (years)	Incidence per 1000 women in placebo arm over 5 years	Risk ratio and 95% CI	Additional cases per 1000 HRT users over 5 years’ use (95% CI)
CEE estrogen-only			
50 – 79	21	0.8 (0.7 – 1.0)	-4 (-6 – 0) *
CEE+MPA estrogen-progestagen**			
50 - 79	17	1.2 (1.0 - 1.5)	4 (0 - 9)
* WHI study in women with no uterus, which did not show an increase in risk of breast cancer **When the analysis was restricted to women who had not used HRT prior to the study there was no increased risk apparent during the first 5 years of treatment. After 5 years the risk was higher than in non-users.			

Risk of venous thromboembolism

HRT is associated with a 1.3- to 3-fold increased relative risk of developing venous thromboembolism (VTE), i.e. deep vein thrombosis or pulmonary embolism. The occurrence of such an event is more likely in the first year of using HRT (see ‘Section 4.4 Special Warnings and Precautions for Use’). Results of the WHI studies are presented below:

Table 5 WHI Studies – Additional risk of VTE over 5 years’ use

Age range (years)	Incidence per 1000 women in placebo arm over 5 years	Risk ratio and 95% CI	Additional cases per 1000 HRT users over 5 years’ use (95% CI)
Oral estrogen-only*			
50 - 59	7	1.2 (0.6 - 2.4)	1 (-3 – 10)
Oral combined estrogen-progestagen			
50 - 59	4	2.3 (1.2 - 4.3)	5 (1 - 13)
* Study in women with no uterus			

Risk of coronary artery disease

The risk of coronary artery disease is slightly increased in users of combined estrogen-progestagen HRT over the age of 60 (see ‘Section 4.4 Special Warnings and Precautions for Use’).

Risk of ischaemic stroke

The use of estrogen-only and estrogen-progestagen therapy is associated with an up to 1.5 fold increased relative risk of ischaemic stroke. This relative risk is not dependent on age or on duration of use, but as the baseline risk is strongly age-dependent, the overall risk of stroke in women who use HRT will increase with age (see ‘Section 4.4 Special Warnings and Precautions for Use’).

Table 6 WHI studies combined – Additional risk of ischaemic stroke* over 5 years’ use

Age range (years)	Incidence per 1000 women in placebo arm over 5 years	Risk ratio and 95% CI	Additional cases per 1000 HRT users over 5 years’ use (95% CI)
50 - 59	8	1.3 (1.1 – 1.6)	3 (1 – 5)
*No differentiation was made between ischaemic and haemorrhagic stroke			

Reporting suspected adverse effects

Reporting suspected adverse reactions after registration of the medicinal product is important. It allows continued monitoring of the benefit-risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions at <http://www.tga.gov.au/reporting-problems>.

4.9 Overdose

Overdosage may cause nausea and vomiting. There is no specific antidote and treatment should be symptomatic.

For information on the management of overdose, contact the Poisons Information Centre on 13 11 26 (Australia).

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic Properties

Mechanism of action

A decrease in estradiol production associated with the loss of ovarian function after menopause is related to several clinical symptoms including vasomotor symptoms, i.e.: hot flushes and sweating, and urogenital atrophy.

The estrogen component of Kliovance is 17 β -estradiol, which is identical to the endogenous human 17 β -estradiol and classified as a natural estrogen. The component norethisterone acetate is a synthetic progestagen, which has progestational actions similar to those of progesterone and, in addition, has weak estrogenic and androgenic properties.

Estrogens regulate the growth, differentiation and functioning of several different tissues, both within and outside the reproductive system. Estrogens may exhibit many biological activities and have effects on bones, skin, arteries and brain, as well as on reproductive tissues. Most of their actions appear to be exerted via the estrogen receptors in target cells.

Progestagens enhance cellular differentiation and generally oppose the actions of estrogens, by decreasing estrogen receptor levels, increasing local metabolism of estrogens to less active metabolites or by inducing gene products that oppose cellular responses to estrogens. Progestagens exert their effects in target cells by binding to specific progesterone receptors. Progesterone receptors have been identified in the female reproductive tract, breast, pituitary, hypothalamus and central nervous system.

The estrogen component of Kliovance substitutes for the loss of estrogen production in postmenopausal women, and alleviates menopausal symptoms. The progestagen components of Kliovance provides protection for the estrogen-induced increased risk of endometrial hyperplasia and carcinoma, and against the estrogen-induced proliferative changes in the endometrium, as shown in long-term studies with Kliovance. In clinical trials with Kliovance, the addition of the norethisterone acetate component enhanced the effect of 17 β -estradiol in relieving vasomotor symptoms.

The biological activity of Kliovance on the hypothalamic-pituitary axis can be observed by the reduction of menopausal serum FSH levels. In addition, a favourable effect has been

found on vaginal cytology (see 'Section 5.1 Pharmacodynamic Properties' - 'Clinical trials'), as shown by an increase in vaginal superficial epithelial cells during Kliovance treatment.

An increased frequency of osteoporosis is observed during the postmenopausal years. When Kliovance is used for the short term relief of menopausal symptoms, it will provide a concomitant preventive effect in reducing bone mineral density loss and fracture risk.

Kliovance influences metabolic parameters. Modifications in fibrinolysis and coagulation parameters have been identified: anti-thrombin III activity, Factor VII and plasminogen activator inhibitor-1 all decreased. Two cases of thrombophlebitis occurred in the clinical trials with Kliovance. Kliovance did not alter glucose tolerance or insulin sensitivity.

Clinical trials

Relief of menopausal symptoms was studied in 3 randomised, double blind, parallel, placebo controlled trials with a duration of 3 lunar months (12 weeks) in symptomatic menopausal and post menopausal women. (KLIM/PD/8/USA) was designed to determine the lowest effective dose of estradiol for menopausal symptom relief in women with moderate to severe symptomatology. 333 women were randomised, 280 completed the trial. This study demonstrated that both the 1 and 2 mg doses were effective in relieving estrogen deficiency symptoms (HFWWS (Hot Flush Weekly Weighted Score) was reduced by 71% (1 mg E₂) and 89% (2 mg E₂) and the GCS score showed a significant reduction in vasomotor symptoms in both these groups). There were no significant changes in somatic or psychological symptoms with any E₂ dose level in this trial. The other two trials (9/USA; 1/N) were designed to confirm the efficacy of 1 mg estradiol in combination with various norethisterone acetate doses. In trial 9/USA, 92 women were randomised with 90 completing the trial. At week 12 89% of the Kliovance (1 mg E₂ + 0.5 mg NETA) group had a 90% reduction in the HFWWS compared to 21% in the placebo group. The GCS subscales scores were lower than placebo. The symptom diary showed a decrease in mean weekly scores for sweats, sleeplessness and fatigue only. In trial 1/N, 119 women were randomised with 108 completing the trial, and at week 12, 85% of the Kliovance group had a 90% reduction in the HFWWS compared to 30% in the placebo group. The KMI also decreased. The GCS showed a significant reduction in vasomotor, psychological, somatic and sexual dysfunction subscales. VAS showed a similar reduction.

The conclusion derived from these trials was that 1mg estradiol, when given alone or in combination with 0.5 mg or 0.25 mg norethisterone acetate, is efficacious in reducing the number and severity of hot flushes. This demonstrated that the addition of norethisterone acetate did not adversely affect the efficacy of the estradiol.

Study KLIM/PD/10/S was conducted over 12-24 months and showed that Kliovance (and other treatment groups) improved hot flushes and sweats, and vaginal cytology.

KLIM/PD/7/USA was a study comparing 1 mg E₂ alone or in combination with 0.1 mg, 0.25 mg or (Kliovance) 0.5 mg NETA in a total of 1176 postmenopausal women for 12 lunar months. The primary efficacy variable was the reduction of the 12-month incidence of endometrial hyperplasia. The conclusion of this study was that after 12 months of treatment Kliovance provided the best protection against estrogen-induced endometrial hyperplasia (incidence 0.4%) and the most satisfactory bleeding control (frequency 10-11%).

Study KLIM/PD/5/S was a 12 month, randomised, parallel, double blind, placebo controlled trial of Kliovance and 1 mg E₂ + 0.25 mg NETA on the effects on lipids, glucose tolerance, coagulation and endometrial histology. Compared to placebo, the Kliovance group had a significant reduction in total cholesterol, LDL cholesterol, lipoprotein (a) and apolipoprotein B-100. The LDL/HDL ratio did not change. There was a reduction in HDL cholesterol which did not reach significance. There was no significant change in carbohydrate metabolism in the 1 mg E₂ + 0.5 mg NETA group. Significant reductions in FVII and PAI-1 were noted over 12 months. Fibrinogen decreased significantly compared to placebo (which rose 12%). The anti-thrombin III decrease was statistically significant compared to placebo. Study KLIM/PD/14/D examined the insulin sensitivity of 54 women in three groups after 12 weeks treatment with placebo, Kliovance or 2 mg E₂ + 1 mg NETA. There was no significant change in insulin sensitivity compared to placebo or difference in start to end HbA1c in the Kliovance group.

The effects of two randomised, multicentre, calcium supplemented (500-1000 mg/day), placebo controlled, 2 year clinical trials have shown that Kliovance is effective in preventing bone loss in postmenopausal women. A total of 462 postmenopausal women with intact uteri and baseline BMD values for lumbar spine within 2 standard deviations of the mean in healthy young women were enrolled. In a US trial, 327 postmenopausal women with a mean age of 53 years were randomised to 7 groups (0.25 mg, 0.5 mg, and 1 mg of estradiol alone, 1 mg estradiol with 0.25 mg norethisterone acetate, 1 mg estradiol with 0.5 mg norethisterone acetate, and 2 mg estradiol with 1 mg norethisterone acetate, and placebo. In a European trial, 135 postmenopausal women with a mean age of 58 years were randomised to 1 mg estradiol with 0.25 mg norethisterone acetate, 1 mg estradiol with 0.5 mg norethisterone acetate, and placebo. Approximately 58% and 67% of the randomised subjects in the two clinical trials, respectively, completed the two clinical trials. BMD was measured using dual-energy x-ray absorptiometry (DEXA). A summary of the results comparing Kliovance and placebo from the two prevention trials is shown in Table 7.

Table 7 Percentage change (mean ± SEM) in bone mineral density (BMD)

	US Trial (KLIM/PD/11/USA)		EU Trial (KLIM/PD/4/F)	
	Placebo (n=37)	Kliovance (n=37)	Placebo (n=40)	Kliovance (n=38)
Lumbar spine	-2.1 ± 0.5	3.8 ± 0.5 *	-0.9 ± 0.6	5.5 ± 0.8*
Femoral neck	-2.3 ± 0.6	1.8 ± 0.7 *	-1.0 ± 0.7	0.7 ± 0.9
Femoral trochanter	-2.0 ± 0.7	3.7 ± 0.7 *	0.8 ± 1.1	6.3 ± 1.2 *
Ward's triangle	-	-	-1.6 ± 1.3	2.7 ± 1.7
Distal radius	-	-	-0.7 ± 0.5	2.1 ± 0.5 *
Total body	-	-	0.4 ± 0.4	3.0 ± 0.5 *
<i>(Intent to Treat analysis, Last observation carried forward)</i>				
<i>US=United States, EU = European</i>				

* Significantly ($p < 0.001$) different from placebo

The overall difference in mean percentage change in BMD at the lumbar spine between Kliovance and placebo was 5.9% in the US trial (1000 mg/day calcium) and 6.3% in the European trial (500 mg/day calcium) at the end of treatment. Kliovance also increased BMD at the femoral neck and femoral trochanter compared to placebo.

Kliovance significantly reduces serum and urine markers of bone turnover with a marked decrease in bone resorption makers (e.g., urinary pyridinoline crosslinks Type 1 collagen C-telopeptide, pyridinoline, deoxypyridinoline) and to a lesser extent in bone formation markers (e.g., serum osteocalcin, bone-specific alkaline phosphatase, C-terminal propeptide of type 1 collagen). The suppression of bone turnover markers was evident by 3 months and persisted throughout the 24-month treatment period.

Women's Health Initiative (WHI) Studies

A substudy of the Women's Health Initiative (WHI) enrolled 16,608 predominantly healthy postmenopausal women (average age of 63 years, range 50 to 79; 83.9% White, 6.5% Black, 5.5% Hispanic) to assess the risks and benefits of the use of a continuous combined regimen of conjugated estrogens (CE) 0.625 mg/day plus medroxyprogesterone acetate (MPA) 2.5 mg/day compared to placebo in the prevention of certain chronic diseases. The primary endpoint was the incidence of coronary heart disease (CHD) (nonfatal myocardial infarction and CHD death), with invasive breast cancer as the primary adverse outcome studied. A "global index" included the earliest occurrence of CHD, invasive breast cancer, stroke, pulmonary embolism (PE), endometrial cancer, colorectal cancer, hip fracture, or death due to other cause. The study did not evaluate the effects of CE + MPA on menopausal symptoms. The estrogen plus progestagen substudy was stopped early because, according to the predefined stopping rule, the increased risk of breast cancer and cardiovascular events exceeded the specified benefits included in the "global index." Results are presented in Table 8.

Table 8 Relative and absolute risk seen in the estrogen plus progestagen substudy of WHI^a

Event ^c	Relative Risk CE+MPA vs Placebo at 5.2 Years (Nominal 95% CI*)	Placebo n = 8102	CE+MPA n = 8506
		Absolute Risk per 10,000 Women-years	
CHD events	1.29 (1.02-1.63)	30	37
<i>Non-fatal MI</i>	1.32 (1.02-1.72)	23	30
<i>CHD death</i>	1.18 (0.70-1.97)	6	7
Invasive breast cancer ^b	1.26 (1.00-1.59)	30	38
Stroke	1.41 (1.07-1.85)	21	29
Pulmonary embolism	2.13 (1.39-3.25)	8	16
Colorectal cancer	0.63 (0.43-0.92)	16	10
Endometrial cancer	0.83 (0.47-1.47)	6	5
Hip fracture	0.66 (0.45-0.98)	15	10
Death due to causes other than the events above	0.92 (0.74-1.14)	40	37
Global Index ^c	1.15 (1.03-1.28)	151	170
Deep vein thrombosis ^d	2.07 (1.49-2.87)	13	26
Vertebral fractures ^d	0.66 (0.44-0.98)	15	9
Other osteoporotic fractures ^d	0.77 (0.69-0.86)	170	131

Event ^c	Relative Risk CE+MPA vs Placebo at 5.2 Years (Nominal 95% CI*)	Placebo n = 8102	CE+MPA n = 8506
		Absolute Risk per 10,000 Women-years	

^a: adapted from JAMA, 2002; 288:321-333
^b: includes metastatic and non-metastatic breast cancer with the exception of in situ breast cancer
^c: a subset of the events was combined in a “global index”, defined as the earliest occurrence of CHD events, invasive breast cancer, stroke, pulmonary embolism, endometrial cancer, colorectal cancer, hip fracture, or death due to other causes
^d: not included in Global Index
^{*}: nominal confidence intervals unadjusted for multiple looks and multiple comparisons. Except for deep vein thrombosis and other osteoporotic fractures, based on adjusted confidence intervals, the relative risks were not statistically significant.

For those outcomes included in the “global index”, the absolute excess risks per 10,000 women-years in the group treated with CE + MPA were 7 more CHD events, 8 more strokes, 8 more PEs, and 8 more invasive breast cancers, while the absolute risk reductions per 10,000 women-years were 6 fewer colorectal cancers and 5 fewer hip fractures. The absolute excess risk of events included in the “global index” was 19 per 10,000 women-years. There was no difference between the groups in terms of all-cause mortality (see ‘Section Warning’ and ‘4.4 Special Warnings and Precautions for Use’).

Women’s Health Initiative Memory Study (WHIMS)

The Women’s Health Initiative Memory Study (WHIMS), a substudy of WHI, enrolled 4,532 predominantly healthy postmenopausal women 65 years of age and older (47% were age 65 to 69 years, 35% were 70 to 74 years, and 18% were 75 years of age and older) to evaluate the effects of CE + MPA on the incidence of probable dementia (primary outcome) compared with placebo. After an average follow-up of 4 years, 40 women in the estrogen/progestagen group (45 per 10,000 women-years) and 21 in the placebo group (22 per 10,000 women-years) were diagnosed with probable dementia. The relative risk of probable dementia in the hormone therapy group was 2.05 (95% CI, 1.21 to 3.48) compared to placebo. Differences between groups became apparent in the first year of treatment. It is unknown whether these findings apply to younger postmenopausal women (see ‘Warning’ and ‘Section 4.4 Special Warnings and Precautions for Use’ (‘Dementia’ and ‘Use in the elderly’)).

5.2 Pharmacokinetic Properties

Micronised estradiol is rapidly and efficiently absorbed from the gastrointestinal tract following oral administration. It undergoes extensive first-pass metabolism in the liver and other enteric organs, and reaches a peak plasma concentration within 5-8 hours. The half-life of 17β-estradiol is about 12-14 hours. In the bloodstream estradiol circulates bound to SHBG (37%) and to albumin (61%), while only approximately 1-2% is unbound. Metabolism of 17β-estradiol, occurs mainly in the liver and the gut but also in target organs, and involves the formation of less active or inactive metabolites, including estrone, catecholestrogens and several estrogen sulfates and glucuronides. Estrogens are excreted with the bile, hydrolysed and reabsorbed (enterohepatic circulation), and mainly eliminated in urine in biologically inactive form.

After oral administration norethisterone acetate is rapidly absorbed and transformed to norethisterone (NET). It undergoes first-pass metabolism in the liver and other enteric organs, and reaches a peak plasma concentration within 0.5-1.5 hours. The terminal half-life of NET

is about 8-11 hours. NET binds to SHBG (36%) and to albumin (61%). The most important metabolites are isomers of 5 α -dihydro-NET and of tetrahydro-NET, which are excreted mainly in the urine as sulfate or glucuronide conjugates.

Food may affect the pharmacokinetic profile of norethisterone; however, the total bioavailability of norethisterone is not decreased. There is no clinical relevance to this finding.

5.3 Preclinical Safety Data

Genotoxicity

There is limited evidence available in the literature suggesting that estradiol may be weakly genotoxic at high doses. No evidence could be found for an increase in the rate of gene mutation in bacterial or mammalian cells, but there was some evidence for the induction of chromosomal aberrations and aneuploidy in mammalian cells, and two groups reported an increase in the incidence of sister chromatid exchanges, indicative of DNA damage. Neither of these latter effects were induced by estradiol in human lymphocyte cultures. Importantly, there was no evidence for increased micronuclei formation in well controlled rodent bone marrow assays.

Carcinogenicity

Supra-physiological doses of estradiol have been associated with the induction of tumours in estrogen-dependent target organs in all rodent species tested. The relevance of these findings with respect to humans has not been established, see 'Section 4.4 Special Warnings and Precautions for Use'- 'Malignant neoplasms'.

6. PHARMACEUTICAL PARTICULARS

6.1 List of Excipients

The tablet cores contain: lactose monohydrate, maize starch, copovidone, purified talc, magnesium stearate. The film coatings contain hypromellose, triacetin and purified talc.

Kliovance does not contain gluten.

6.2 Incompatibilities

Incompatibilities were either not assessed or not identified as part of the registration of this medicine.

6.3 Shelf Life

In Australia, information on the shelf life can be found on the public summary of the Australian Register of Therapeutic Goods (ARTG). The expiry date can be found on the packaging.

6.4 Special Precautions for Storage

Store Kliovance in a dry place, protected from light. Keep the container in the outer carton in order to protect it from light. Store below 25°C. Do not refrigerate. Keep out of reach of children.

6.5 Nature and Contents of Container

Kliovance is supplied in a calendar dial pack consisting of a polypropylene base and polystyrene lid containing 28 tablets.

6.6 Special Precautions for Disposal

In Australia, any unused medicine or waste material should be disposed of by taking it to your local pharmacy.

6.7 Physicochemical Properties

Estradiol is a white or almost white crystalline powder which is practically insoluble in water and soluble in acetone.

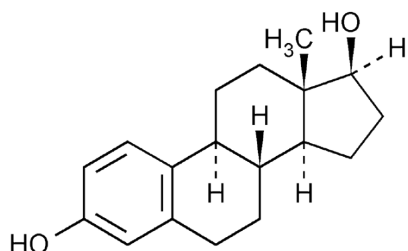
Norethisterone acetate (NETA) is a white or yellowish-white crystalline powder which is practically insoluble in water and soluble in ethanol and acetone.

Chemical structure

Estradiol - chemical name: estra-1,3,5(10)-triene-3,17 β -diol (as hemihydrate. The molecular formula is C₁₈H₂₄O₂. Estradiol hemihydrate has a molecular weight of 281.39.

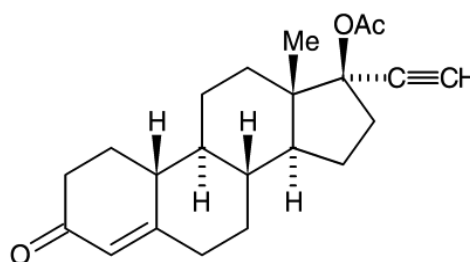
Norethisterone acetate - chemical name: 17 β -acetoxy-19-nor-17 α -pregn-4-en-20-yn-3-one. Norethisterone acetate has 6 chiral centres. The molecular formula is C₂₂H₂₈O₃, with a molecular weight of 340.5.

Estradiol hemihydrate



'½H₂O'

Norethisterone acetate



CAS number

Estradiol hemihydrate: 35380-71-3

Norethisterone acetate: 51-98-9

7. MEDICINE SCHEDULE (POISONS STANDARD)

S4 Prescription Only Medicine

8. SPONSOR

Novo Nordisk Pharmaceuticals Pty Ltd
Level 10, 118 Mount Street
North Sydney NSW 2060

9. DATE OF FIRST APPROVAL

30 August 1999

10. DATE OF REVISION

8 January 2024

Summary table of changes

Section changed	Summary of new information
4.8	Updated terminology for angioedema