

## SUMMARY OF PRODUCT CHARACTERISTICS

### 1 NAME OF THE MEDICINAL PRODUCT

Tamoxifen 40mg Film-Coated Tablets

### 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Tamoxifen Citrate BP 60.80mg, equivalent to 40mg of tamoxifen.

Excipient with known effect: Lactose.

For the full list of excipients, see section 6.1.

### 3. PHARMACEUTICAL FORM

Film-coated tablets

### 4 CLINICAL PARTICULARS

#### 4.1 Therapeutic indications

'Tamoxifen' is indicated for:

1. The treatment of breast cancer.
2. The treatment of anovulatory infertility.

#### 4.2 Posology and method of administration

##### Posology

##### *1. Breast cancer:*

**Adults:** The recommended daily dose of tamoxifen is normally 20mg. No additional benefit, in terms of delayed recurrence or improved survival in patients, has been demonstrated with higher doses. Substantive evidence supporting the use of treatment with 30-40mg per day is not available, although these doses have been used in some patients with advanced disease.

**Older people:** Similar dosing regimens of tamoxifen have been used in older people with breast cancer and in some of these patients it has been used as sole therapy.

## 2. *Anovulatory infertility:*

Before commencing any course of treatment, whether initial or subsequent, the possibility of pregnancy must be excluded. In women who are menstruating regularly, but with anovular cycles, the initial course of treatment consists of 20 mg given daily on the second, third, fourth and fifth days of the menstrual cycle. If unsatisfactory basal temperature records or poor pre-ovulatory cervical mucus indicate that this initial course of treatment has been unsuccessful, further courses may be given during subsequent menstrual periods, increasing the dosage to 40mg and then 80mg daily.

In women who are not menstruating regularly, the initial course may begin on any day. If no signs of ovulation are demonstrable, then a subsequent course of treatment may start 45 days later, with dosage increased as above. If a patient responds with menstruation, then the next course of treatment is commenced on the second day of the cycle.

### **Paediatric population**

The use of tamoxifen is not recommended in children. The safety and efficacy of tamoxifen in children has not yet been established (see sections 5.1 and 5.2).

### **Method of administration**

For administration by the oral route.

## 4.3 **Contraindications**

Tamoxifen should not be used in the following:

- pregnancy. Pre-menopausal patients must be carefully examined before treatment for breast cancer or infertility to exclude the possibility of pregnancy (see also section 4.6).
- hypersensitivity to the active substance or to any of the excipients listed in section 6.1.
- concurrent anastrozole therapy (see section 4.5).
- treatment for infertility. Patients with a personal or family history of confirmed idiopathic venous thromboembolic events or a known genetic defect.

## 4.4 **Special warnings and precautions for use**

Menstruation is suppressed in a proportion of premenopausal women receiving tamoxifen for the treatment of breast cancer.

Severe cutaneous adverse reactions (SCARs) including Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN), which can be life-threatening or fatal, have been reported in association with tamoxifen treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, tamoxifen should be withdrawn immediately and an alternative treatment considered (as appropriate). If the patient has developed a serious reaction such as SJS or TEN with the use of tamoxifen, treatment with tamoxifen must not be restarted in this patient at any time.

In patients with hereditary angioedema, tamoxifen may induce or exacerbate symptoms of angioedema.

An increased incidence of endometrial changes including hyperplasia, polyps, cancer and uterine sarcoma (mostly malignant mixed Mullerian tumours), has been reported in association with tamoxifen treatment. The underlying mechanism is unknown but may be related to the oestrogen-like effect of tamoxifen. Any patient receiving or having previously received tamoxifen who reports abnormal gynaecological symptoms, especially vaginal bleeding, or who presents with menstrual irregularities, vaginal discharge and symptoms such as pelvic pain or pressure should be promptly investigated.

A number of second primary tumours, occurring at sites other than the endometrium and the opposite breast, have been reported in clinical trials, following the treatment of breast cancer patients with tamoxifen. No causal link has been established and the clinical significance of these observations remains unclear.

#### Venous thromboembolism (VTE)

- A two- to three-fold increase in the risk for VTE has been demonstrated in healthy tamoxifen-treated women (see section 4.8).
- In patients with *breast cancer*, prescribers should obtain careful histories with respect to the patient's personal and family history of VTE. If suggestive of a prothrombotic risk, patients should be screened for thrombophilic factors. Patients who test positive should be counselled regarding their thrombotic risk. The decision to use tamoxifen in these patients should be based on the overall risk to the patient. In selected patients, the use of tamoxifen with prophylactic anticoagulation may be justified (cross reference section 4.5).
- The risk of VTE is further increased by severe obesity, increasing age and all other risk factors for VTE. The risks and benefits should be carefully considered for all patients before treatment with tamoxifen. In patients with *breast cancer*, this risk is also increased by concomitant chemotherapy (see section 4.5). Long-term anticoagulant prophylaxis

may be justified for some patients with breast cancer who have multiple risk factors for VTE.

- Surgery and immobility: For patients being treated for *infertility*, Tamoxifen should be stopped at least 6 weeks before surgery or long-term immobility (when possible) and re-started only when the patient is fully mobile. For patients with *breast cancer*, tamoxifen treatment should only be stopped if the risk of tamoxifen-induced thrombosis clearly outweighs the risks associated with interrupting treatment. All patients should receive appropriate thrombosis prophylactic measures and should include graduated compression stockings for the period of hospitalisation, early ambulation, if possible, and anticoagulant treatment.
- If *any* patient presents with VTE, tamoxifen should be stopped immediately and appropriate anti-thrombosis measures initiated. In patients being treated for *infertility*, tamoxifen should not be re-started unless there is a compelling alternative explanation for their thrombotic event. In patients receiving tamoxifen for *breast cancer*, the decision to re-start tamoxifen should be made with respect to the overall risk for the patient. In selected patients with *breast cancer*, the continued use of tamoxifen with prophylactic anticoagulation may be justified.
- *All* patients should be advised to contact their doctors immediately if they become aware of any symptoms of VTE.

In delayed microsurgical breast reconstruction Tamoxifen may increase the risk of microvascular flap complications.

In an uncontrolled trial in 28 girls aged 2–10 years with McCune Albright Syndrome (MAS), who received 20 mg once a day for up to 12 months duration, mean uterine volume increased after 6 months of treatment and doubled at the end of the one-year study. While this finding is in line with the pharmacodynamic properties of tamoxifen, a causal relationship has not been established (see section 5.1).

In the literature it has been shown that CYP2D6 poor metabolisers have a lowered plasma level of endoxifen, one of the most important active metabolites of tamoxifen (see section 5.2).

Concomitant medications that inhibit CYP2D6 may lead to reduced concentrations of the active metabolite endoxifen. Therefore, potent inhibitors of CYP2D6 (e.g. paroxetine, fluoxetine, quinidine, cinacalcet or bupropion) should whenever possible be avoided during tamoxifen treatment (see section 4.5 and 5.2). Tamoxifen contains lactose. Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicine.

Radiation recall has been reported very rarely in patients on Tamoxifen who

have received prior radiotherapy. The reaction is usually reversible upon temporary cessation of therapy and re-challenge may result in a milder reaction. Treatment with Tamoxifen was continued in most cases.

Studies in premenopausal women who were treated with tamoxifen for reduction of breast cancer risk or in the management of breast cancer have reported decrease in bone mineral density. Premenopausal women taking Tamoxifen Tablets should be advised regarding measures to maintain bone health, according to local clinical guidelines.

Tamoxifen Tablets at the recommended dose, may prolong the QTc interval on the electrocardiogram (ECG).

ECG and electrolyte monitoring are recommended in patients with underlying risks of QT prolongation and cardiac comorbidities such as:

- Long QT syndrome
- Clinically significant or uncontrolled heart disease, such as congestive heart failure, recent myocardial infarction and repolarisation abnormalities
- Concomitant use of QT prolonging medicines
- Electrolyte abnormalities.

ECG should be assessed before initiating treatment and follow-up ECG should be repeated once tamoxifen has reached steady state concentrations (at least 4 weeks). ECG monitoring thereafter should be done as clinically indicated for patient specific risk factors, i.e. introduction or dose changes of QT prolonging medicines, electrolyte abnormalities, new symptoms (e.g. palpitations, dizziness, syncope).

Appropriate monitoring of serum electrolytes (including potassium, magnesium, calcium phosphate) should be performed before initiating treatment and during treatment as clinically indicated. Any abnormalities should be corrected prior to initiating tamoxifen and during treatment.

#### **4.5 Interaction with other medicinal products and other forms of interaction**

When tamoxifen is used in combination with coumarin-type anticoagulants, a significant increase in anticoagulant effect may occur. Where such co-administration is initiated, careful monitoring of the patient is recommended.

When Tamoxifen is used in combination with cytotoxic agents for the treatment of breast cancer, there is increased risk of thromboembolic events occurring (see also sections 4.4 and 4.8). Because of this increase in risk of VTE, thrombosis prophylaxis should be considered for these patients for the period of concomitant chemotherapy.

The use of tamoxifen in combination with anastrozole as adjuvant therapy has not shown improved efficacy compared with tamoxifen alone.

As tamoxifen is metabolised by cytochrome P450 3A4, care is required when co-administering with drugs, such as rifampicin, known to induce this enzyme as tamoxifen levels may be reduced. The clinical relevance of this reduction is unknown.

Pharmacokinetic interaction with CYP2D6 inhibitors, showing a reduction in plasma level of an active tamoxifen metabolite, 4-hydroxy-Ndesmethyl-tamoxifen (endoxifen), has been reported in the literature.

Pharmacokinetic interaction with CYP2D6 inhibitors, showing a 65-75% reduction in plasma levels of one of the more active forms of the drug, i.e. endoxifen, has been reported in the literature. Reduced efficacy of tamoxifen has been reported with concomitant usage of some SSRI antidepressants (e.g. paroxetine) in some studies. As a reduced effect of tamoxifen cannot be excluded, co-administration with potent CYP2D6 inhibitors (e.g. paroxetine, fluoxetine, quinidine, cinacalcet or bupropion) should whenever possible be avoided (see section 4.4 and 5.2).

Tamoxifen Tablets at the recommended dose may prolong the QTc interval on the electrocardiogram (ECG), and the concomitant use of Tamoxifen Tablets with other medicinal products known to prolong the QT interval may further potentiate QT prolongation. Therefore, caution is advised in case of such combination and ECG and electrolyte monitoring are recommended in such patients (see section 4.4).

## **4.6 Fertility, pregnancy and lactation**

### *Pregnancy*

Tamoxifen must not be administered during pregnancy. There have been a small number of reports of spontaneous abortions, birth defects and foetal deaths after women have taken tamoxifen, although no causal relationship has been established.

Reproductive toxicology studies in rats, rabbits and monkeys have shown no teratogenic potential.

In rodent models of foetal reproductive tract development, tamoxifen was associated with changes similar to those caused by oestradiol, ethinyloestradiol, clomiphene and diethylstilboestrol (DES). Although the clinical relevance of these changes is unknown, some of them, especially vaginal adenosis, are similar to those seen in young women who were exposed to DES in-utero and who have a 1 in 1000 risk of developing clear-cell carcinoma of the vagina or cervix. Only a small number of pregnant women have been exposed to tamoxifen. Such exposure has not been reported to cause subsequent vaginal adenosis or clear-cell carcinoma of the vagina or cervix in young women exposed in utero to tamoxifen.

Women should be advised not to become pregnant whilst taking tamoxifen and should use barrier or other non-hormonal contraceptive methods if sexually active. Pre-menopausal patients must be carefully examined before treatment to exclude pregnancy. Women should be informed of the potential risks to the foetus, should they become pregnant whilst taking tamoxifen or within two months of cessation of therapy.

#### *Breast-feeding*

It is not known if tamoxifen is excreted in human milk and therefore the drug is not recommended during breast-feeding. The decision either to discontinue nursing or discontinue tamoxifen should take into account the importance of the drug to the mother.

#### **4.7 Effects on ability to drive and use machines**

Tamoxifen is unlikely to impair the ability of patients to drive or operate machinery. However, fatigue has been reported with the use of tamoxifen and caution should be observed when driving or using machinery while such symptoms persist.

#### **4.8 Undesirable effects**

##### **Tabulated list of adverse reactions**

Unless specified, the following frequency categories were calculated from the number of adverse events reported in a large phase III study conducted in 9366 postmenopausal women patients with operable breast cancer treated for 5 years and unless specified, no account was taken of the frequency within the comparative treatment group or whether the investigator considered it to be related to study medication.

**Table 1 Adverse Drug Reactions (ADR) seen with Tamoxifen**

<b>Frequency</b>	<b>System Organ Class (SOC)</b>	<b>ADR</b>
<b>Very common (≥ 10%)</b>	<i>Metabolism and nutrition disorders</i>	• Fluid retention
	<i>Vascular disorders</i>	• Hot flushes
	<i>Gastrointestinal disorders</i>	• Nausea
	<i>Reproductive system and breast disorders</i>	• Vaginal bleeding • Vaginal discharge
	<i>Skin and subcutaneous tissue disorders</i>	• Skin rash
	<i>General disorders and</i>	• Fatigue

	<i>administration site conditions</i>	
<b>Common</b> (≥ 1% and <10%)	<i>Neoplasms benign, malignant and unspecified (incl cysts and polyps)</i>	• Uterine fibroids
	<i>Blood and lymphatic system disorders</i>	• Anaemia
	<i>Immune system disorders</i>	• Hypersensitivity reactions
	<i>Nervous system disorders</i>	• Ischaemic cerebrovascular events • Headache • Light headedness • Sensory disturbances (including paraesthesia and dysgeusia)
	<i>Eye disorders</i>	• Cataracts • Retinopathy
	<i>Gastrointestinal disorders</i>	• Vomiting • Diarrhoea • Constipation
	<i>Hepatobiliary disorders</i>	• Changes in liver enzymes • Fatty liver
	<i>Skin and subcutaneous tissue disorders</i>	• Alopecia
	<i>Musculoskeletal and connective tissue disorders</i>	• Leg cramp • Myalgia
	<i>Reproductive system and breast disorders</i>	• Pruritus vulvae • Endometrial changes (including hyperplasia and polyps)
	<i>Investigations</i>	• Elevated triglycerides
	<i>Multiple SOC Terms</i>	• Thromboembolic events (including deep vein thrombosis, microvascular thrombosis and pulmonary embolism)
<b>Uncommon</b> (≥ 0.1% and <1%)	<i>Neoplasms benign, malignant and unspecified (incl cysts and polyps)</i>	• Endometrial cancer
	<i>Blood and lymphatic system disorders</i>	• Thrombocytopenia • Leukopenia
	<i>Metabolism and nutrition disorders</i>	• Hypercalcaemia (in patients with bony metastases)
	<i>Eye disorders</i>	• Visual disturbances
	<i>Respiratory, thoracic and mediastinal disorders</i>	• Interstitial pneumonitis
	<i>Gastrointestinal disorders</i>	• Pancreatitis
	<i>Hepatobiliary disorders</i>	• Cirrhosis of the liver
<b>Rare</b> (≥ 0.01% and	<i>Neoplasms benign, malignant and unspecified (incl cysts and polyps)</i>	• Uterine sarcoma (mostly malignant mixed Mullerian

<b>&lt;0.1%</b>		tumours) <sup>a</sup> • Tumour flare <sup>a</sup>
	<i>Blood and lymphatic system disorders</i>	• Neutropenia <sup>a</sup> • Agranulocytosis <sup>a</sup>
	<i>Nervous system disorders</i>	• Optic neuritis
	<i>Eye disorders</i>	• Corneal changes • Optic neuropathy <sup>a</sup>
	<i>Hepatobiliary disorders</i>	• Hepatitis • Cholestasis <sup>a</sup> • Hepatic failure <sup>a</sup> • Hepatocellular injury <sup>a</sup> • Hepatic necrosis <sup>a</sup>
	<i>Skin and subcutaneous tissue</i>	• Angioedema • Steven-Johnsons syndrome <sup>a</sup> • Cutaneous vasculitis <sup>a</sup> • Bullous pemphigoid <sup>a</sup> • Erythema multiforme <sup>a</sup> • Toxic epidermal necrolysis <sup>a</sup>
	<i>Reproductive system and breast disorders</i>	• Endometriosis <sup>a</sup> • Cystic ovarian swelling <sup>a</sup> • Vaginal polyps
	<i>Investigations</i>	Electrocardiogram QT Prolonged
<b>Very Rare (&lt;0.01%)</b>	<i>Skin and subcutaneous tissue disorders</i>	• Cutaneous lupus erythematosus <sup>b</sup>
	<i>Congenital, familial and genetic disorders</i>	• Porphyria cutanea tarda <sup>b</sup>
	<i>Injury, poisoning and procedural complications</i>	• Radiation Recall <sup>b</sup>
<b>Not known</b>	<i>Skin and subcutaneous tissue disorders</i>	Exacerbation of hereditary angioedema
	<i>Musculoskeletal and connective tissue disorders</i>	Decreased Bone mineral Density (premenopausal women)

<sup>a</sup> This adverse drug reaction was not reported in the tamoxifen arm (n= 3094) of the above study; however, it has been reported in other trials or from other sources. The frequency has been calculated using the upper limit of the 95% confidence interval for the point estimate (based on 3/X, where X represents the total sample size e.g. 3094). This is calculated as 3/3094 which equates to a frequency category of 'rare'.

<sup>b</sup> The event was not observed in other major clinical studies. The frequency has been calculated using the upper limit of the 95% confidence interval for the point estimate (based on 3/X, where X represents the total sample size of 13,357 patients in the major clinical studies). This is calculated as 3/13,357 which equates to a frequency category of 'very rare'.

Side effects can be classified as either due to the pharmacological action of

the drug, e.g. hot flushes, vaginal bleeding, vaginal discharge, pruritus vulvae and tumour flare, or as more general side effects, e.g. gastrointestinal intolerance, headache, light-headedness and occasionally, fluid retention and alopecia.

When side effects are severe, it may be possible to control them by a simple reduction of dosage (to not less than 20 mg/day) without loss of control of the disease. If side effects do not respond to this measure, it may be necessary to stop the treatment.

Skin rashes (including rare reports of erythema multiforme, Stevens- Johnson syndrome, cutaneous vasculitis and bullous pemphigoid) and commonly hypersensitivity reactions including angioedema have been reported.

Uncommonly, patients with bony metastases have developed hypercalcaemia on initiation of therapy.

Cases of visual disturbances, including rare reports of corneal changes, and common reports of retinopathy have been described in patients receiving Tamoxifen therapy. Cataracts have been reported commonly in association with the administration of tamoxifen.

Cases of optic neuropathy and optic neuritis have been reported in patients receiving tamoxifen and, in a small number of cases, blindness has occurred.

Sensory disturbances (including paraesthesia and dysgeusia) have been reported commonly in patients receiving tamoxifen.

Uterine fibroids, endometriosis and other endometrial changes including hyperplasia and polyps have been reported.

Falls in platelet count, usually to 80,000 to 90,000 per cu mm but occasionally lower, have been reported in patients taking tamoxifen for breast cancer.

Leucopenia has been observed following the administration of tamoxifen, sometimes in association with anaemia and/or thrombocytopenia. Neutropenia has been reported on rare occasions; this can sometimes be severe, and very rarely cases of agranulocytosis have been reported.

There is evidence of ischaemic cerebrovascular events and thromboembolic events, including deep vein thrombosis, microvascular thrombosis and pulmonary embolism, occurring commonly during tamoxifen therapy (see sections 4.3, 4.4 and 4.5). When tamoxifen is used in combination with cytotoxic agents, there is an increased risk of thromboembolic events occurring.

Leg cramps and myalgia have been reported commonly in patients receiving tamoxifen.

Uncommonly, cases of interstitial pneumonitis have been reported.

Tamoxifen has been associated with changes in liver enzyme levels and with a spectrum of more severe liver abnormalities which in some cases were fatal, including fatty liver, cholestasis and hepatitis, liver failure, cirrhosis, and, hepatocellular injury (including hepatic necrosis).

Commonly, elevation of serum triglyceride levels, in some cases with pancreatitis, may be associated with the use of tamoxifen.

Cystic ovarian swellings have rarely been observed in women receiving tamoxifen.

Vaginal polyps have rarely been observed in women receiving tamoxifen.

Cutaneous lupus erythematosus has been observed very-rarely in patients receiving tamoxifen.

Porphyria cutanea tarda has been observed very-rarely in patients receiving tamoxifen.

Fatigue has been reported very commonly in patients taking tamoxifen.

Radiation Recall has been observed very rarely in patients receiving tamoxifen.

Uncommonly incidences of endometrial cancer and rare instances of uterine sarcoma (mostly malignant mixed Mullerian tumours) has been reported in association with tamoxifen treatment.

#### **Reporting of suspected adverse reactions**

Reporting suspected adverse reactions after authorisation 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 via the Yellow Card Scheme at [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard).

#### **4.9 Overdose**

On theoretical grounds an overdosage would be expected to cause enhancement of the pharmacological side-effects mentioned above. Observations in animals show that extreme overdosage (100 - 200 times recommended daily dose) may produce oestrogenic effects.

There have been reports in the literature that tamoxifen given at several times the standard dose may be associated with prolongation of the QT interval of the ECG.

There is no specific antidote to overdosage, and treatment must be symptomatic.

## 5 PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Anti-estrogens. ATC code: L02BA01.

Tamoxifen is a non-steroidal, triphenylethylene-based drug which displays a complex spectrum of oestrogen antagonist and oestrogen agonist-like pharmacological effects in different tissues. In breast cancer patients, at the tumour level, tamoxifen acts primarily as an antioestrogen, preventing oestrogen binding to the oestrogen receptor. In the clinical situation, it is recognised that tamoxifen leads to reductions in levels of blood total cholesterol and low density lipoproteins in postmenopausal women of the order of 10 - 20%. Tamoxifen does not adversely affect bone mineral density.

An uncontrolled trial was undertaken in a heterogeneous group of 28 girls aged 2 to 10 years with McCune Albright Syndrome (MAS), who received 20 mg once a day for up to 12 months duration. Among the patients who reported vaginal bleeding during the pre-study period, 62% (13 out of 21 patients) reported no bleeding for a 6-month period and 33% (7 out of 21 patients) reported no vaginal bleeding for the duration of the trial. Mean uterine volume increased after 6 months of treatment and doubled at the end of the one-year study. While this finding is in line with the pharmacodynamic properties of tamoxifen, a causal relationship has not been established (see section 4.4). There are no long-term safety data in children. In particular, the long-term effects of tamoxifen on growth, puberty and general development have not been studied.

CYP2D6 polymorphism status may be associated with variability in clinical response to tamoxifen. The poor metaboliser status may be associated with reduced response. The consequences of the findings for the treatment of CYP2D6 poor metabolisers have not been fully elucidated (see sections 4.4, 4.5 and 5.2).

#### CYP2D6 genotype

Available clinical data suggest that patients, who are homozygote for non-functional CYP2D6 alleles, may experience reduced effect of tamoxifen in the treatment of breast cancer. The available studies have mainly been performed in postmenopausal women (see sections 4.4 and 5.2)

### 5.2 Pharmacokinetic properties

After oral administration, tamoxifen is absorbed rapidly with maximum serum concentrations attained within 4–7 hours. Steady state concentrations (about 300ng/ml) are achieved after four weeks treatment with 40mg daily. The drug is highly protein bound to serum albumin (>99%). Metabolism is by hydroxylation, demethylation and conjugation, giving rise to several metabolites which have a similar pharmacological profile to the parent compound and thus contribute to the therapeutic effect. Excretion occurs primarily via the faeces and an elimination half-life of approximately seven days has been calculated for the drug itself, whereas that for N-desmethyltamoxifen, the principal circulating metabolite, is 14 days.

In a clinical study where girls between 2 and 10 years with McCune Albright Syndrome (MAS) received 20mg tamoxifen once a day for up to 12 months duration, there was an age-dependent decrease in clearance and an increase in exposure (AUC), (with values up to 50% higher in the youngest patients) compared with adults.

Tamoxifen is metabolised mainly via CYP3A4 to N-desmethyl-tamoxifen, which is further metabolised by CYP2D6 to another active metabolite endoxifen. In patients who lack the enzyme CYP2D6 endoxifen concentrations are approximately 75% lower than in patients with normal CYP2D6 activity. Administration of strong CYP2D6 inhibitors reduces endoxifen circulating levels to a similar extent.

### **5.3 Preclinical safety data**

Tamoxifen was not mutagenic in a range of in vitro and in vivo mutagenicity tests. Tamoxifen was genotoxic in some in-vitro and in-vivo genotoxicity tests in rodents. Gonadal tumours in mice and liver tumours in rats receiving tamoxifen have been reported in long term studies. The clinical relevance of these findings has not been established.

Tamoxifen is a drug on which extensive clinical experience has been obtained. Relevant information for the prescriber is provided elsewhere in the Summary of Product Characteristics.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Lactose  
Maize starch  
Pregelatinised maize starch  
Magnesium stearate  
Water

### **Film Coat**

Methylhydroxypropylcellulose  
Propylene glycol  
Opaspray M-1-7111B (E171, E464)  
Water

## **6.2 Incompatibilities**

Not applicable.

## **6.3 Shelf life**

3 years.

## **6.4 Special precautions for storage**

Do not store above 25°C.

Store in the original container in order to protect from light and moisture.

## **6.5 Nature and contents of container**

Packs containing 28, 30, 56, 60, 84, 90 or 250 tablets in polypropylene or polyethylene containers with child resistant closures or amber glass bottles.

Blister packs of white PVC and aluminium foil coated with PVC/PVDC film, containing 28, 30, 56, 60, 84 or 90 tablets.

Not all pack sizes may be marketed.

## **6.6 Special precautions for disposal**

No special requirements for disposal.

## **7. MARKETING AUTHORISATION HOLDER**

Wockhardt UK Limited  
Ash Road North  
Wrexham  
LL13 9UF  
UK

**8. MARKETING AUTHORISATION NUMBER**

PL 29831/0196

**9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of latest renewal: 22 July 2005

**10 DATE OF REVISION OF THE TEXT**

14/05/2026