

## SUMMARY OF PRODUCT CHARACTERISTICS

### 1. NAME OF THE MEDICINAL PRODUCT

***Targin 5, Targin 10, Targin 20, Targin 30, Targin 40***

**Prolonged-release tablets**

### 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

#### ***Targin 5***

Each prolonged-release tablet contains 5 mg of oxycodone hydrochloride equivalent to 4.5 mg oxycodone, and 2.73 mg of naloxone hydrochloride dihydrate equivalent to 2.5 mg naloxone hydrochloride and 2.25 mg naloxone.

#### ***Targin 10***

Each prolonged-release tablet contains 10 mg of oxycodone hydrochloride equivalent to 9 mg oxycodone, and 5.45 mg of naloxone hydrochloride dihydrate equivalent to 5 mg naloxone hydrochloride and 4.5 mg naloxone.

#### ***Targin 20***

Each prolonged-release tablet contains 20 mg of oxycodone hydrochloride equivalent to 18 mg oxycodone, and 10.9 mg of naloxone hydrochloride dihydrate equivalent to 10 mg naloxone hydrochloride and 9 mg naloxone.

#### ***Targin 30***

Each prolonged-release tablet contains 30 mg of oxycodone hydrochloride equivalent to 27 mg oxycodone, and 16.48 mg of naloxone hydrochloride dihydrate equivalent to 15 mg naloxone hydrochloride and 13.5 mg naloxone.

#### ***Targin 40***

Each prolonged-release tablet contains 40 mg of oxycodone hydrochloride equivalent to 36 mg oxycodone, and 21.8 mg of naloxone hydrochloride dihydrate equivalent to 20 mg naloxone hydrochloride and 18 mg naloxone.

Excipient with known effect:

Each tablet of ***Targin 5*** contains 71.75 mg lactose monohydrate.

Each tablet of ***Targin 10*** contains 64.25 mg lactose monohydrate.

Each tablet of ***Targin 20*** contains 54.5 mg lactose monohydrate.

Each tablet of ***Targin 30*** contains 38.42 mg lactose monohydrate.

Each tablet of ***Targin 40*** contains 109 mg lactose monohydrate.

For the full list of excipients, see section 6.1.

### 3. PHARMACEUTICAL FORM

Prolonged-release tablets.

***Targin 5*** are oblong, blue film-coated tablets, unscored and marked "OXN" on one side and "5" on the other side.

***Targin 10*** are oblong, white film-coated tablets, unscored and marked "OXN" on one side and "10" on the other side.

***Targin 20*** are oblong, pink film-coated tablets, unscored and marked "OXN" on one side and "20" on the other side.

***Targin 30*** are oblong, brown film-coated tablets, unscored and marked "OXN" on one side and "30" on the other side.

***Targin 40*** are oblong, yellow film-coated tablets, unscored and marked "OXN" on one side and "40" on the other side.

## 4. CLINICAL PARTICULARS

### WARNING: RISKS FROM CONCOMITANT USE WITH BENZODIAZEPINES OR OTHER CNS DEPRESSANTS

- Concomitant use of opioids with benzodiazepines or other central nervous system (CNS) depressants, including alcohol, may result in profound sedation, respiratory depression, coma, and death [see sections 4.4, 4.5]
- Reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate.
- Limit dosages and durations to the minimum required.
- Follow patients for signs and symptoms of respiratory depression and sedation.

### 4.1 Therapeutic indications

**Targin** is indicated for the relief of moderate to severe pain.

The oxycodone component is indicated for the relief of moderate to severe pain in adults who require continuous around the- clock opioid analgesia for several days or more.

The opioid antagonist naloxone is added to counteract opioid-induced constipation by blocking the action of oxycodone at opioid receptors locally in the gut.

### 4.2 Posology and method of administration

#### Posology

The analgesic efficacy of **Targin** is equivalent to oxycodone hydrochloride prolonged-release formulations. The dosage should be adjusted to the intensity of pain and the sensitivity of the individual patient. Unless otherwise prescribed, **Targin** should be administered as follows:

#### Adults

The usual starting dose for an opioid naïve patient is 10 mg/5 mg of oxycodone hydrochloride/naloxone hydrochloride at 12 hourly intervals (**Targin 10**).

Lower strength (**Targin 5**) is available to facilitate dose titration when initiating opioid therapy and for individual dose adjustment.

Patients already receiving opioids may be started on higher doses depending on their previous opioid experience.

The maximum daily dose of **Targin** is 80 mg oxycodone hydrochloride and 40 mg naloxone hydrochloride. For patients requiring higher doses of **Targin**, administration of supplemental prolonged-release oxycodone hydrochloride at the same time intervals should be considered. In the case of supplemental oxycodone hydrochloride dosing, the beneficial effect of naloxone hydrochloride on bowel function may be impaired.

After complete discontinuation of therapy with **Targin** with a subsequent switch to another opioid a worsening of the bowel function can be expected.

Some patients taking these prolonged-release tablets according to a regular time schedule require immediate release analgesics as "rescue" medication for breakthrough pain. **Targin** is a prolonged-release formulation and therefore not intended for the treatment of breakthrough pain. For the treatment of breakthrough pain, a single dose of "rescue medication" should approximate one sixth of the equivalent daily dose of oxycodone hydrochloride. The need for more than two "rescues" per day is usually an indication that the dosage requires upward adjustment. This adjustment should be made every 1-2 days in steps of **Targin 5** twice daily, or where necessary **Targin 10** twice daily until a stable dose is reached. The aim is to establish a patient-specific twice daily dose that will maintain adequate analgesia and make use of as little rescue medication as possible for as long as pain therapy is necessary.

**Targin** is taken at the determined dosage twice daily according to a fixed time schedule. While symmetric administration (the same dose mornings and evenings) subject to a fixed time schedule (every 12 hours) is appropriate for the majority of patients, some patients, depending on the individual pain situation, may benefit from asymmetric dosing tailored to their pain pattern. In general, the lowest effective analgesic dose should be selected.

In non-malignant pain therapy, daily doses of up to 40 mg/20 mg oxycodone hydrochloride/naloxone hydrochloride are usually sufficient, but higher doses may be needed.

#### Elderly patients

As for younger adults the dosage should be adjusted to the intensity of the pain and the sensitivity of the individual patient.

#### Patients with impaired hepatic function

A clinical trial has shown that plasma concentrations of both oxycodone and naloxone are elevated in patients with hepatic impairment. Naloxone concentrations were affected to a higher degree than oxycodone (see section 5.2). The clinical relevance of a relative high naloxone exposure in hepatic impaired patients is yet not known. Caution must be exercised when administering **Targin** to patients with mild hepatic impairment (see section 4.4). In patients with moderate and severe hepatic impairment **Targin** is contraindicated (see section 4.3).

#### Patients with impaired renal function

A clinical trial has shown that plasma concentrations of both oxycodone and naloxone are elevated in patients with renal impairment (see section 5.2). Naloxone concentrations were affected to a higher degree than oxycodone. The clinical relevance of a relative high naloxone exposure in renal impaired patients is yet not known. Caution should be exercised when administering **Targin** to patients with renal impairment (see section 4.4).

#### Paediatric population

The safety and efficacy of **Targin** in children aged below 18 years has not been established. No data are available.

#### Method of administration

Oral use.

**Targin** prolonged-release tablets are taken in the determined dosage twice daily in a fixed time schedule.

The prolonged-release tablets may be taken with or without food with sufficient liquid. These tablets must be swallowed whole, and not broken, chewed or crushed (see section 4.4).

#### Duration of use

**Targin** should not be administered for longer than absolutely necessary. If long-term treatment is necessary in view of the nature and severity of the illness, careful and regular monitoring is required to establish whether and to what extent further treatment is necessary.

When the patient no longer requires opioid therapy, it may be advisable to taper the dose gradually (see section 4.4).

### **4.3 Contraindications**

- Hypersensitivity to the active substances or to any of the excipients listed in section 6.1,
- Severe respiratory depression with hypoxia and/or hypercapnia,
- Severe chronic obstructive pulmonary disease,
- Cor pulmonale,
- Severe bronchial asthma,
- Non-opioid induced paralytic ileus,
- Moderate to severe hepatic impairment.

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

Caution must be exercised when administering these tablets to patients with:

- Severely impaired respiratory function
- Sleep apnoea
- CNS depressants co-administration (see below and section 4.5)
- Monoamine oxidase inhibitors (MAOIs, see below and section 4.5)
- Tolerance, physical dependence and withdrawal (see below)
- Psychological dependence [addiction], abuse profile and history of substance and/or alcohol abuse (see below)

- Elderly or infirm
- Head injury, intracranial lesions or increased intracranial pressure, reduced level of consciousness of uncertain origin
- Epileptic disorder or predisposition to convulsions
- Hypotension
- Hypertension
- Pancreatitis
- Mild hepatic impairment
- Renal impairment
- Opioid-induced paralytic ileus
- Myxoedema
- Hypothyroidism
- Addison's disease (adrenal cortical insufficiency)
- Prostate hypertrophy
- Toxic psychosis
- Alcoholism
- Delirium tremens
- Cholelithiasis
- Pre-existing cardiovascular diseases

#### Respiratory depression

The primary risk of opioid excess is respiratory depression.

#### *Sleep-related breathing disorders*

Opioids can cause sleep-related breathing disorders including central sleep apnoea (CSA) and sleep-related hypoxemia. Opioid use increases the risk of CSA in a dose-dependent manner. In patients who present with CSA, consider decreasing the total opioid dosage.

#### *Risk from concomitant use of sedative medicines such as benzodiazepines or related drugs:*

Concomitant use of opioids, including oxycodone hydrochloride and sedative medicines such as benzodiazepines or related drugs may result in sedation, respiratory depression, coma and death. Because of these risks, concomitant prescribing with these sedative medicines should be reserved for patients for whom alternative treatment options are not possible. If a decision is made to prescribe **Targin** concomitantly with sedative medicines, the lowest effective dose should be used, and the duration of treatment should be as short as possible.

The patients should be followed closely for signs and symptoms of respiratory depression and sedation. In this respect, it is strongly recommended to inform patients and their caregivers to be aware of these symptoms (see section 4.5).

#### MAOIs

**Targin** must be administered with caution in patients taking MAOIs or who have received MAOIs within the previous two weeks.

Caution must also be exercised when administering these tablets to patients with mild hepatic or renal impairment. Careful medical monitoring is particularly necessary for patients with severe renal impairment.

Diarrhoea may be considered as a possible effect of naloxone.

#### Tolerance, physical dependence and withdrawal

During long-term administration, the patient may develop tolerance to the medicinal product and require higher doses to maintain the desired effect. Chronic administration of **Targin** may lead to physical dependence. Withdrawal symptoms may occur upon the abrupt cessation of therapy. If therapy is no longer required, it may be advisable to reduce the daily dose gradually in order to avoid the occurrence of withdrawal syndrome (see section 4.2).

**Targin** is not suitable for the treatment of withdrawal symptoms.

#### Opioid Use Disorder (abuse and dependence)

Tolerance and physical and/or psychological dependence may develop upon repeated administration of opioids such as oxycodone. Iatrogenic addiction following therapeutic use of opioids is known to occur.

Repeated use of **Targin** may lead to Opioid Use Disorder (OUD). Abuse or intentional misuse of **Targin** may result in overdose and/or death. The risk of developing OUD is increased in patients with a personal or a family history (parents or siblings) of substance use disorders (including alcohol use disorder), in current tobacco users or in patients with a personal history of other mental health disorders (e.g., major depression, anxiety and personality disorders).

Patients will require monitoring for signs of drug-seeking behaviour (e.g., too early requests for refills). This includes the review of concomitant opioids and psycho-active drugs (like benzodiazepines). For patients with signs and symptoms of OUD, consultation with an addiction specialist should be considered.

In order not to impair the prolonged-release characteristic of the prolonged-release tablets, the prolonged-release tablets must be taken whole and must not be broken, chewed or crushed. Breaking, chewing or crushing the prolonged-release tablets for ingestion leads to a faster release of the active substances and the absorption of a possibly fatal dose of oxycodone (see section 4.9).

Patients who have experienced somnolence and/or an episode of sudden sleep onset must refrain from driving or operating machines. Furthermore, a reduction of the dose or termination of therapy may be considered. Because of possible additive effects, caution should be advised when patients are taking other sedating medicinal products in combination with **Targin** (see sections 4.5 and 4.7).

Concomitant use of alcohol and **Targin** may increase the undesirable effects of **Targin**; concomitant use should be avoided.

Studies have not been performed on the safety and efficacy of **Targin** in children and adolescents below the age of 18 years. Therefore, their use in children and adolescents under 18 years of age is not recommended.

There is no clinical experience in patients with cancer associated to peritoneal carcinomatosis or with sub-occlusive syndrome in advanced stages of digestive and pelvic cancers. Therefore, the use of **Targin** in this population is not recommended.

These tablets are not recommended for pre-operative use or within the first 12-24 hours post-operatively. Depending on the type and extent of surgery, the anaesthetic procedure selected, other co-medication and the individual condition of the patient, the exact timing for initiating post-operative treatment with **Targin** depends on a careful risk-benefit assessment for each individual patient.

Any abuse of **Targin** by drug addicts is strongly discouraged.

If abused parenterally, intranasally or orally by individuals dependent on opioid agonists, such as heroin, morphine, or methadone, **Targin** is expected to produce marked withdrawal symptoms - because of the opioid receptor antagonist characteristics of naloxone - or to intensify withdrawal symptoms already present (see section 4.9).

These tablets consist of a dual-polymer matrix, intended for oral use only. Abusive parenteral injections of the prolonged-release tablet constituents (especially talc) can be expected to result in local tissue necrosis and pulmonary granulomas or may lead to other serious, potentially fatal undesirable effects.

The empty prolonged-release tablet matrix may be visible in the stool.

Opioids such as oxycodone may influence the hypothalamic-pituitary-adrenal or -gonadal axes. Some changes that can be seen include an increase in serum prolactin and decreases in plasma cortisol and testosterone. Clinical symptoms may manifest from these hormonal changes.

In patients under long-term opioid treatment the switch to **Targin** may initially provoke withdrawal symptoms or diarrhoea.

Hyperalgesia that will not respond to a further dose increase of oxycodone may occur in particular in high doses. An oxycodone dose reduction or change in opioid may be required.

The use of **Targin** may produce positive results in doping controls. The use of **Targin** as a doping agent may become a health hazard.

This medicinal product contains lactose. Patients with rare hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose malabsorption should not take **Targin**.

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

The concomitant use of opioids with sedative medicines such as benzodiazepines or related drugs increases the risk of sedation, respiratory depression, coma and death because of additive CNS depressant effect. The dose and duration of concomitant use should be limited (see section 4.4).

Drugs which depress the CNS include, but are not limited to: other opioids, gabapentinoids such as pregabalin, anxiolytics, hypnotics and sedatives (including benzodiazepines), anti-depressants, antipsychotics, anti-histamines and anti-emetics.

**Targin** must be administered with caution in patients taking MAOIs or who have received MAOIs within the previous two weeks.

Concomitant administration of oxycodone with serotonin agents, such as a Selective Serotonin Re-uptake Inhibitor (SSRI) or a Serotonin Norepinephrine Re-uptake Inhibitor (SNRI) may cause serotonin toxicity. The symptoms of serotonin toxicity may include mental-status changes (e.g., agitation, hallucinations, coma), autonomic instability (e.g., tachycardia, labile blood pressure, hyperthermia), neuromuscular abnormalities (e.g., hyperreflexia, incoordination, rigidity), and/or gastrointestinal symptoms (e.g., nausea, vomiting, diarrhoea). Oxycodone should be used with caution and the dosage may need to be reduced in patients using these medications.

Alcohol may enhance the pharmacodynamic effects of **Targin**; concomitant use should be avoided.

Clinically relevant changes in International Normalized Ratio (INR or Quick-value) in both directions have been observed in individuals if oxycodone and coumarin anticoagulants are co-applied.

Oxycodone is metabolised primarily via the CYP3A4 pathways and partly via the CYP2D6 pathway (see section 5.2). The activities of these metabolic pathways may be inhibited or induced by various co-administered drugs or dietary elements. **Targin** doses may need to be adjusted accordingly.

CYP3A4 inhibitors, such as macrolide antibiotics (e.g. clarithromycin, erythromycin, telithromycin), azole-antifungal agents (e.g. ketoconazole, voriconazole, itraconazole, posaconazole), protease inhibitors (e.g. ritonavir, indinavir, nelfinavir, saquinavir), cimetidine and grapefruit juice may cause decreased clearance of oxycodone which could lead to an increase in oxycodone plasma concentrations. A reduction in the dose of **Targin** and subsequent re-titration may be necessary.

CYP3A4 inducers, such as rifampicin, carbamazepine, phenytoin and St. John's Wort, may induce the metabolism of oxycodone and cause increased clearance of the drug, resulting in a decrease in oxycodone plasma concentrations. Caution is advised, and further titration may be necessary to reach an adequate level of symptom control.

Theoretically, medicinal products that inhibit CYP2D6 activity, such as paroxetine, fluoxetine and quinidine, may cause decreased clearance of oxycodone which could lead to an increase in oxycodone plasma concentrations. Concomitant administration with CYP2D6 inhibitors had an insignificant effect on the elimination of oxycodone and also had no influence on the pharmacodynamic effects of oxycodone.

*In vitro* metabolism studies indicate that no clinically relevant interactions are to be expected between oxycodone and naloxone.

The likelihood of clinically relevant interactions between paracetamol, acetylsalicylic acid or naltrexone and the combination of oxycodone and naloxone in therapeutic concentrations is minimal.

#### 4.6 Fertility, pregnancy and lactation

##### Pregnancy

There are no data from the use of **Targin** in pregnant women and during childbirth. Limited data on the use of oxycodone during pregnancy in humans reveal no evidence of an increased risk of congenital abnormalities. For naloxone, insufficient clinical data on exposed pregnancies are available. However, systemic exposure of the women to naloxone after use of **Targin** is relatively low (see section 5.2). Both oxycodone and naloxone pass into the placenta. Animal studies have not been performed with oxycodone and naloxone in combination (see section 5.3). Animal studies with oxycodone or naloxone administered as single drugs have not revealed any teratogenic or embryotoxic effects.

Long-term administration of oxycodone during pregnancy may lead to withdrawal symptoms in the newborn. If administered during childbirth, oxycodone may evoke respiratory depression in the newborn.

**Targin** should only be used during pregnancy if the benefit outweighs the possible risks to the unborn child or neonate.

### **Breastfeeding**

Oxycodone passes into the breast milk. A milk-plasma concentration ratio of 3:4:1 was measured and oxycodone effects in the suckling infant are therefore conceivable. It is not known whether naloxone also passes into the breast milk. However, after taking **Targin**, systemic naloxone levels are very low (see section 5.2). A risk to the suckling child cannot be excluded in particular following intake of multiple doses of **Targin** by the breastfeeding mother.

Breastfeeding should be discontinued during treatment with **Targin**.

### **Fertility**

No data on the effect of oxycodone and naloxone on human fertility are available. In rats, there was no effect on mating or fertility with **Targin** treatment (see section 5.3).

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

**Targin** has moderate influence on the ability to drive and use machines. This is particularly likely at the beginning of treatment, after dose increase or product rotation and if **Targin** is combined with other CNS depressant agents. Patients stabilised on a specific dosage will not necessarily be restricted. Therefore, patients should consult with their physician as to whether driving or the use of machinery is permitted.

Patients being treated with **Targin** and presenting with somnolence and/or sudden sleep episodes must be informed to refrain from driving or engaging in activities where impaired alertness may put themselves or others at risk of serious injury or death (e.g., operating machines) until such recurrent episodes and somnolence have resolved (see also sections 4.4 and 4.5).

This medicine can impair cognitive function and can affect a patient's ability to drive safely.

When prescribing this medicine, patients should be told:

- The medicine is likely to affect your ability to drive.
- Do not drive until you know how the medicine affects you.

#### **4.8 Undesirable effects**

The following frequencies are the basis for assessing undesirable effects:

Very common ( $\geq 1/10$ )

Common ( $\geq 1/100$  to  $< 1/10$ )

Uncommon ( $\geq 1/1,000$  to  $< 1/100$ )

Rare ( $\geq 1/10,000$  to  $< 1/1,000$ )

Very rare ( $< 1/10,000$ )

Not known (cannot be estimated from the available data)

Within each frequency grouping, undesirable effects are presented in order of decreasing seriousness.

### **Undesirable effects in the treatment of pain**

#### **Immune system disorders**

Uncommon: Hypersensitivity

#### **Metabolism and nutrition disorders**

Common: Decreased appetite up to loss of appetite

#### Psychiatric disorders

Common: Insomnia

Uncommon: Abnormal thinking, anxiety, confusional state, depression, libido decreased, nervousness, restlessness

Rare: Drug dependence (see Section 4.4)

Not known: Euphoric mood, hallucination, nightmares, aggression

#### Nervous system disorders

Common: Dizziness, headache, somnolence

Uncommon: Convulsions (particularly in persons with epileptic disorder or predisposition to convulsions), disturbance in attention, dysgeusia, speech disorder, syncope, tremor, lethargy

Not known: Paraesthesia, sedation, sleep apnoea syndrome (see Section 4.4)

#### Eye disorders

Uncommon: Visual impairment

#### Ear and labyrinth disorders

Common: Vertigo

#### Cardiac disorders

Uncommon: Angina pectoris (in particular in patients with history of coronary artery disease), palpitations

Rare: Tachycardia

#### Vascular disorders

Common: Hot flush

Uncommon: Blood pressure decreased, blood pressure increased

#### Respiratory, thoracic and mediastinal disorders

Uncommon: Dyspnoea, rhinorrhoea, cough

Rare: Yawning

Not known: Respiratory depression

Central sleep apnoea syndrome

#### Gastrointestinal disorders

Common: Abdominal pain, constipation, diarrhoea, dry mouth, dyspepsia, vomiting, nausea, flatulence

Uncommon: Abdominal distension

Rare: Tooth disorder

Not known: Eructation

#### Hepatobiliary disorders

Uncommon: Hepatic enzymes increased, biliary colic

#### Skin and subcutaneous tissue disorders

Common: Pruritus, skin reactions, hyperhidrosis

#### Musculoskeletal and connective tissue disorders

Uncommon: Muscle spasms, muscle twitching, myalgia

#### Renal and urinary disorders

Uncommon: Micturition urgency

Not known: Urinary retention

#### Reproductive system and breast disorders

Not known: Erectile dysfunction

#### General disorders and administration site conditions

Common: Asthenia, fatigue



Uncommon: Chest pain, chills, drug withdrawal syndrome, malaise, pain, peripheral oedema, thirst

#### Investigations

Uncommon: Weight decreased

Rare: Weight increased

#### Injury, poisoning and procedural complications

Uncommon: Injuries from accidents

### **For the active substance oxycodone hydrochloride, the following additional undesirable effects are known:**

Due to its pharmacological properties, oxycodone hydrochloride may cause respiratory depression, miosis, bronchial spasm and spasms of nonstriated muscles as well as suppress the cough reflex.

#### Infections and infestations

Rare: Herpes simplex

#### Immune system disorders

Not known: Anaphylactic reaction

#### Metabolism and nutrition disorders

Uncommon: Dehydration

Rare: Increased appetite

#### Psychiatric disorders

Common: Altered mood and personality change, decreased activity, psychomotor hyperactivity

Uncommon: Agitation, perception disturbances (e.g., derealisation)

#### Nervous system disorders

Uncommon: Concentration impaired, migraine, hypertonia, involuntary muscle contractions, hypoaesthesia, abnormal coordination

Not known: Hyperalgesia

#### Ear and labyrinth disorders

Uncommon: Hearing impaired

#### Vascular disorders

Uncommon: Vasodilatation

#### Respiratory, thoracic and mediastinal disorders

Uncommon: Dysphonia

#### Gastrointestinal disorders

Common: Hiccups

Uncommon: Dysphagia, ileus, mouth ulceration, stomatitis

Rare: Melaena, gingival bleeding,

Not known: Dental caries

#### Hepatobiliary disorders

Not known: Cholestasis

#### Skin and subcutaneous tissue disorders

Uncommon: Dry skin

Rare: Urticaria

#### Renal and urinary disorders

Common: Dysuria

### Reproductive system and breast disorders

Uncommon: Hypogonadism

Not known: Amenorrhoea

### General disorders and administration site conditions

Uncommon: Oedema, drug tolerance

Not known: Drug withdrawal syndrome neonatal

### **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.

Any suspected adverse events should be reported to the Ministry of Health according to the National Regulation by using an online form

<https://sideeffects.health.gov.il/>

## **4.9 Overdose**

### *Symptoms of intoxication*

Depending on the history of the patient, an overdose of **Targin** may be manifested by symptoms that are either triggered by oxycodone (opioid receptor agonist) or by naloxone (opioid receptor antagonist).

Symptoms of oxycodone overdose include miosis, respiratory depression, somnolence progressing to stupor, hypotonia, bradycardia as well as hypotension. Coma, non-cardiogenic pulmonary oedema and circulatory failure may occur in more severe cases and may lead to a fatal outcome.

Symptoms of a naloxone overdose alone are unlikely.

### *Therapy of intoxication*

Withdrawal symptoms due to an overdose of naloxone should be treated symptomatically in a closely supervised environment.

Clinical symptoms suggestive of an oxycodone overdose may be treated by the administration of opioid antagonists (e.g., naloxone hydrochloride 0.4-2 mg intravenously). Administration should be repeated at 2-3 minute intervals, as clinically necessary. It is also possible to apply an infusion of 2 mg naloxone hydrochloride in 500 ml of 0.9% sodium chloride or 5% dextrose (0.004 mg/ml naloxone). The infusion should be run at a rate aligned to the previously administered bolus doses and to the patient's response.

Consideration may be given to gastric lavage.

Supportive measures (artificial ventilation, oxygen, vasopressors and fluid infusions) should be employed, as necessary, to manage the circulatory shock accompanying an overdose. Cardiac arrest or arrhythmias may require cardiac massage or defibrillation. Artificial ventilation should be applied if necessary. Fluid and electrolyte metabolism should be maintained.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Analgesics; Opioids; Natural opium alkaloids

ATC code: N02AA55

### *Mechanism of action*

Oxycodone and naloxone have an affinity for kappa, mu and delta opiate receptors in the brain, spinal cord and peripheral organs (e.g., intestine). Oxycodone acts as opioid-receptor agonist at these receptors and binds to the endogenous opioid receptors in the CNS. By contrast, naloxone is a pure antagonist acting on all types of opioid receptors.

### *Pharmacodynamic effects*

Because of the pronounced first-pass metabolism, the bioavailability of naloxone upon oral administration is < 3%, therefore a clinically relevant systemic effect is unlikely. Due to the local competitive antagonism of the opioid receptor mediated oxycodone effect by naloxone in the gut, naloxone reduces the bowel function disorders that are typical for opioid treatment.

#### *Clinical efficacy and safety*

For effects of opioids upon the endocrine system, see section 4.4.

Preclinical studies show differing effects of natural opioids on components of the immune system. The clinical significance of these findings is not known. It is not known whether oxycodone, a semi-synthetic opioid, has similar effects on the immune system to natural opioids.

#### Analgesia

In a 12 weeks parallel group double-blinded study in 322 patients with opioid-induced constipation, patients who were treated with oxycodone hydrochloride-naloxone hydrochloride had on average one extra complete spontaneous (without laxatives) bowel movement in the last week of treatment, compared to patients who continued using similar doses of oxycodone hydrochloride prolonged release tablets ( $p < 0.0001$ ). The use of laxatives in the first four weeks was significantly lower in the oxycodone-naloxone group compared to the oxycodone monotherapy group (31% versus 55%, respectively,  $p < 0.0001$ ). Similar results were shown in a study with 265 non-cancer patients comparing daily doses of oxycodone hydrochloride/naloxone hydrochloride of 60 mg/30 mg to up to 80 mg/40 mg with oxycodone hydrochloride monotherapy in the same dose range.

## **5.2 Pharmacokinetic properties**

### **Oxycodone hydrochloride**

#### Absorption

Oxycodone has a high absolute bioavailability of up to 87% following oral administration.

#### Distribution

Following absorption, oxycodone is distributed throughout the entire body. Approximately 45% is bound to plasma protein.

Oxycodone crosses the placenta and may be detected in breast milk.

#### Biotransformation

Oxycodone is metabolised in the gut and the liver to noroxycodone and oxymorphone and to various glucuronide conjugates. Noroxycodone, oxymorphone and noroxymorphone are produced via the cytochrome P450 system. Quinidine reduces the production of oxymorphone in man without substantially influencing the pharmacodynamics of oxycodone. The contribution of the metabolites to overall pharmacodynamic effect is insignificant.

#### Elimination

Oxycodone and its metabolites are excreted in both urine and faeces.

### **Naloxone hydrochloride**

#### Absorption

Following oral administration, naloxone has a very low systemic availability of <3%.

#### Distribution

Naloxone passes into the placenta. It is not known whether naloxone also passes into breast milk.

#### Biotransformation and elimination

After parenteral administration, the plasma half-life is approximately one hour. The duration of action depends upon the dose and route of administration, intramuscular injection producing a more prolonged effect than intravenous doses. It is metabolised in the liver and excreted in the urine. The principal metabolites are naloxone glucuronide, 6 $\beta$ -Naloxol and its glucuronide.

### **Oxycodone hydrochloride/naloxone hydrochloride combination (*Targin*)**

#### Pharmacokinetic/pharmacodynamic relationships

The pharmacokinetic characteristics of oxycodone from *Targin* is equivalent to those of prolonged-release oxycodone hydrochloride tablets administered together with prolonged-release naloxone hydrochloride tablets.

All dosage strengths of *Targin* are interchangeable.

After the oral administration of **Targin** in maximum dose to healthy subjects, the plasma concentrations of naloxone are so low that it is not feasible to carry out a pharmacokinetic analysis. To conduct a pharmacokinetic analysis naloxone-3-glucuronide as surrogate marker is used, since its plasma concentration is high enough to measure.

Overall, following ingestion of a high-fat breakfast, the bioavailability and peak plasma concentration ( $C_{max}$ ) of oxycodone were increased by an average of 16% and 30% respectively compared to administration in the fasting state. This was evaluated as clinically not relevant, therefore **Targin** prolonged-release tablets may be taken with or without food (see section 4.2).

*In vitro* drug metabolism studies have indicated that the occurrence of clinically relevant interactions involving **Targin** is unlikely.

#### Elderly patients

##### Oxycodone

For  $AUC_{\tau}$  of oxycodone, on average there was an increase to 118% (90% C.I.: 103, 135), for elderly compared with younger volunteers. For  $C_{max}$  of oxycodone, on average there was an increase to 114% (90% C.I.: 102, 127). For  $C_{min}$  of oxycodone, on average there was an increase to 128% (90% C.I.: 107, 152).

##### Naloxone

For  $AUC_{\tau}$  of naloxone, on average there was an increase to 182% (90% C.I.: 123, 270), for elderly compared with younger volunteers. For  $C_{max}$  of naloxone, on average there was an increase to 173% (90% C.I.: 107, 280). For  $C_{min}$  of naloxone, on average there was an increase to 317% (90% C.I.: 142, 708).

##### Naloxone-3-glucuronide:

For  $AUC_{\tau}$  of naloxone-3-glucuronide, on average there was an increase to 128% (90% C.I.: 113, 147), for elderly compared with younger volunteers. For  $C_{max}$  of naloxone-3-glucuronide, on average there was an increase to 127% (90% C.I.: 112, 144). For  $C_{min}$  of naloxone-3-glucuronide, on average there was an increase to 125% (90% C.I.: 105, 148).

#### Patients with impaired hepatic function

##### Oxycodone

For  $AUC_{INF}$  of oxycodone, on average there was an increase to 143% (90% C.I.: 111, 184), 319% (90% C.I.: 248, 411) and 310% (90% C.I.: 241, 398) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers. For  $C_{max}$  of oxycodone, on average there was an increase to 120% (90% C.I.: 99, 144), 201% (90% C.I.: 166, 242) and 191% (90% C.I.: 158, 231) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers. For  $t_{1/2Z}$  of oxycodone, on average there was an increase to 108% (90% C.I.: 70, 146), 176% (90% C.I.: 138, 215) and 183% (90% C.I.: 145, 221) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers.

##### Naloxone

For  $AUC_t$  of naloxone, on average there was an increase to 411% (90% C.I.: 152, 1112), 11518% (90% C.I.: 4259, 31149) and 10666% (90% C.I.: 3944, 28847) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers. For  $C_{max}$  of naloxone, on average there was an increase to 193% (90% C.I.: 115, 324), 5292% (90% C.I.: 3148, 8896) and 5252% (90% C.I.: 3124, 8830) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers. Due to insufficient amount of data available  $t_{1/2Z}$  and the corresponding  $AUC_{INF}$  of naloxone were not calculated. The bioavailability comparisons for naloxone were therefore based on  $AUC_t$  values.

##### Naloxone-3-glucuronide

For  $AUC_{INF}$  of naloxone-3-glucuronide, on average there was an increase to 157% (90% C.I.: 89, 279), 128% (90% C.I.: 72, 227) and 125% (90% C.I.: 71, 222) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers. For  $C_{max}$  of naloxone-3-glucuronide, on average there was an increase to 141% (90% C.I.: 100, 197), 118% (90% C.I.: 84, 166) and a decrease to 98% (90% C.I.: 70, 137) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers. For  $t_{1/2Z}$  of naloxone-3-glucuronide, on average there was an increase to 117% (90% C.I.: 72, 161), a decrease to 77% (90% C.I.: 32, 121) and a decrease to 94% (90% C.I.: 49, 139) for mild, moderate and severe hepatically impaired subjects, respectively, compared with healthy volunteers.

#### Patients with impaired renal function

##### Oxycodone

For  $AUC_{INF}$  of oxycodone, on average there was an increase to 153% (90% C.I.: 130, 182), 166% (90% C.I.: 140, 196) and 224% (90% C.I.: 190, 266) for mild, moderate and severe renally impaired subjects, respectively, compared with

healthy volunteers. For  $C_{max}$  of oxycodone, on average there was an increase to 110% (90% C.I.: 94, 129), 135% (90% C.I.: 115, 159) and 167% (90% C.I.: 142, 196) for mild, moderate and severe renally impaired subjects, respectively, compared with healthy volunteers. For  $t_{1/2Z}$  of oxycodone, on average there was an increase to 149%, 123% and 142% for mild, moderate and severe renally impaired subjects, respectively, compared with healthy volunteers.

#### Naloxone

For  $AUC_t$  of naloxone, on average there was an increase to 2850% (90% C.I.: 369, 22042), 3910% (90% C.I.: 506, 30243) and 7612% (90% C.I.: 984, 58871) for mild, moderate and severe renally impaired subjects, respectively, compared with healthy volunteers. For  $C_{max}$  of naloxone, on average there was an increase to 1076% (90% C.I.: 154, 7502), 858% (90% C.I.: 123, 5981) and 1675% (90% C.I.: 240, 11676) for mild, moderate and severe renally impaired subjects, respectively, compared with healthy volunteers. Due to insufficient amount of data available  $t_{1/2Z}$  and the corresponding  $AUC_{INF}$  of naloxone were not calculated. The bioavailability comparisons for naloxone were therefore based on  $AUC_t$  values. The ratios may have been influenced by the inability to fully characterize the naloxone plasma profiles for the healthy subjects.

#### Naloxone-3-glucuronide

For  $AUC_{INF}$  of naloxone-3-glucuronide, on average there was an increase to 220% (90% C.I.: 148, 327), 370% (90% C.I.: 249, 550) and 525% (90% C.I.: 354, 781) for mild, moderate and severe renally impaired subjects, respectively, compared with healthy subjects. For  $C_{max}$  of naloxone-3-glucuronide, on average there was an increase to 148% (90% C.I.: 110, 197), 202% (90% C.I.: 151, 271) and 239% (90% C.I.: 179, 320) for mild, moderate and severe renally impaired subjects, respectively, compared with healthy subjects. For  $t_{1/2Z}$  of naloxone-3-glucuronide, on average there was no significant change between the renally impaired subjects and the healthy subjects.

#### Abuse

To avoid damage to the prolonged-release properties of the tablets, **Targin** must not be broken, crushed or chewed, as this leads to a rapid release of the active substances. In addition, naloxone has a slower elimination rate when administered intranasally. Both properties mean that abuse of **Targin** will not have the effect intended. In oxycodone-dependent rats, the intravenous administration of oxycodone hydrochloride / naloxone hydrochloride at a ratio of 2:1 resulted in withdrawal symptoms.

### 5.3 Preclinical safety data

There are no data from studies on reproductive toxicity of the combination of oxycodone and naloxone. Studies with the single components showed that oxycodone had no effect on fertility and early embryonic development in male and female rats in doses of up to 8 mg/kg body weight and induced no malformations in rats in doses of up to 8 mg/kg and in rabbits in doses of 125 mg/kg bodyweight. However, in rabbits, when individual fetuses were used in statistical evaluation, a dose related increase in developmental variations was observed (increased incidences of 27 presacral vertebrae, extra pairs of ribs). When these parameters were statistically evaluated using litters, only the incidence of 27 presacral vertebrae was increased and only in the 125 mg/kg group, a dose level that produced severe pharmacotoxic effects in the pregnant animals. In a study on pre- and postnatal development in rats F1 body weights were lower at 6 mg/kg/d when compared to body weights of the control group at doses which reduced maternal weight and food intake (NOAEL 2 mg/kg body weight). There were neither effects on physical, reflexological, and sensory developmental parameters nor on behavioural and reproductive indices. The standard oral reproduction toxicity studies with naloxone show that at high oral doses naloxone was not teratogenic and/or embryo/fetotoxic, and does not affect perinatal/postnatal development. At very high doses (800 mg/kg/day) naloxone produced increased pup deaths in the immediate post-partum period at dosages that produced significant toxicity in maternal rats (e.g., body weight loss, convulsions). However, in surviving pups, no effects on development or behaviour were observed.

Long-term carcinogenicity studies with oxycodone/naloxone in combination have not been performed.

Carcinogenicity was evaluated in a 2-year oral gavage study conducted in Sprague-Dawley rats. Oxycodone did not increase the incidence of tumours in male and female rats at doses up to 6mg/kg/day. The doses were limited by opioid-related pharmacological effects of oxycodone.

For naloxone, a 24-months oral carcinogenicity study was performed in rats with doses up to 100 mg/kg/day and a 6-month carcinogenicity study was performed in TgrasH2 mice at doses up to 200 mg/kg/day. The results of the two studies indicate that naloxone is not carcinogenic under these conditions.

Oxycodone and naloxone as single entities show a clastogenic potential in *in vitro* assays. No similar effects were observed, however, under *in vivo* conditions, even at toxic doses. The results indicate that the mutagenic risk of **Targin** to humans at therapeutic concentrations may be ruled out with adequate certainty.

## 6. PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

Ethylcellulose, stearyl alcohol, lactose monohydrate, talc, magnesium stearate, polyvinyl alcohol partially hydrolysed, titanium dioxide (E171), macrogol 3350.

**Targin 5** also contains hydroxypropylcellulose and brilliant blue FCF aluminium lake (E133).

**Targin 10** also contains povidone K30.

**Targin 20** also contains povidone K30 and iron oxide red (E172).

**Targin 30** also contains povidone K30 and iron oxide red, iron oxide yellow & iron oxide black (E172).

**Targin 40** also contains povidone K30 and iron oxide yellow (E172).

### 6.2 Incompatibilities

Not applicable.

### 6.3 Shelf life

The expiry date of the product is indicated on the packaging materials.

### 6.4 Special precautions for storage

Store below 25°C.

**Targin 5:** Store below 25°C in the original package.

### 6.5 Nature and contents of container

PVC blister packs with aluminium foil backing containing 20 tablets.

### 6.6 Special precautions for disposal and other handling

Any unused product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION NUMBER(S)

**Targin 5:** 143 98 33120

**Targin 10:** 139 95 31636

**Targin 20:** 139 96 31637

**Targin 30:** 160 43 35262

**Targin 40:** 143 99 33122

## 8. MANUFACTURER AND REGISTRATION HOLDER: Rafa Laboratories Ltd., POB 405 Jerusalem 9100301, Israel.

Revised in July 2023 according to MOH's guidelines.