

Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Tylox 30 mg / 500 mg Effervescent Tablets

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each effervescent tablet contains 30 mg of codeine phosphate hemihydrate and 500 mg of paracetamol.

Excipients: Sodium 326.6 mg/tablet

Aspartame (E951) 25 mg/tablet

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Effervescent tablet.

Round, white to off-white, bevelled edged tablets.

4 CLINICAL PARTICULARS

4.1 Therapeutic Indications

Tylox Effervescent Tablets is indicated for use in patients older than 12 years of age for the treatment of acute moderate pain which is not considered to be relieved by other analgesics such as paracetamol or ibuprofen (alone).

4.2 Posology and method of administration

Posology

Adults:

The usual dose is one or two effervescent tablets up to 4 times a day at intervals of not less than 6 hours. Maximum daily dose should not exceed 240 mg of codeine phosphate hemihydrate (i.e. not more than eight tablets per 24 hours should be taken).

Duration of treatment:

Codeine should be used at the lowest effective dose for the shortest period of time. The duration of treatment should be limited to 3 days and if no effective pain relief is achieved the patients/carers should be advised to seek the views of a physician.

Dosage should be adjusted according to the severity of the pain and the response of the patient. However, it should be kept in mind that tolerance to codeine can develop with continued use and that the incidence of untoward effects is dose related. Doses of codeine higher than 60 mg fail to give commensurate relief of pain but merely prolong analgesia and are associated with an appreciably increased incidence of undesirable side effects.

Elderly:

As for adults, however a reduced dose may be required. See warnings.

Paediatric population:

Children aged less than 12 years:

Codeine should not be used in children below the age of 12 years because of the risk of opioid toxicity due to the variable and unpredictable metabolism of codeine to morphine (see sections 4.3 and 4.4).

Children aged 12 to 15 years:

One capsule every 6 hours when necessary to a maximum of 4 capsules in 24 hours.

Children aged 16 to 18 years:

One to two capsules every 6 hours when necessary up to a maximum of 8 capsules in 24 hours.

Method of administration

Tylox Effervescent Tablets are given orally and should be dissolved in at least half a tumblerful of water before taking.

4.3 Contraindications

Hypersensitivity to the active substances, or to any of its excipients listed in section 6.1.

For children under the age of 12 years.

In all paediatric patients (0-18 years of age) who undergo tonsillectomy and/or adenoidectomy for obstructive sleep apnoea syndrome due to an increased risk of developing serious and life threatening adverse reactions (see section 4.4).

In patients for whom it is known they are CYP2D6 ultra-rapid metabolisers.

Conditions where morphine and opioids are contraindicated e.g:

- Acute asthma (see section 4.4 and 4.8)
- Respiratory depression (see section 4.8)
- Acute alcoholism (see section 4.4 and 4.5)
- Following biliary tract surgery
- Head injuries
- Raised intra-cranial pressure
- Breastfeeding (see section 4.6)

Monoamine oxidase inhibitor therapy, concurrent or within 14 days.

4.4 Special warnings and precautions for use

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

Concomitant use of Tylox and sedative medicines such as benzodiazepine 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 Tylox 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.

The risk-benefit of continued use should be assessed regularly by the prescriber.

These tablets should be used with caution in patients sensitive to the effects of opioids, e.g. the elderly (who may be sensitive to their central and gastro-intestinal effects) and debilitated patients, patients with CNS depression, hypothyroidism, Addison's disease and prostatic hypertrophy or urethral stricture, myasthenia gravis, reduced blood volume, seizures, shock, inflammatory or obstructive bowel disorders. Care should also be observed if prolonged therapy is contemplated.

Opioid analgesics should be avoided in patients with pancreatobiliary tract disorders.

Care is advised in the administration of paracetamol to patients with severe renal or severe hepatic impairment. The hazard of overdose is greater in those with alcoholic liver disease.

This medicinal product contains 326.6 mg sodium per dose, equivalent to 16 % of the WHO recommended maximum daily intake of 2 g sodium for an adult. This should be taken into account when prescribing for patients for whom a sodium restriction is indicated.

Tylenol Effervescent Tablets also contain 25 mg aspartame/tablet and therefore care should be taken in phenylketonuria. Neither non-clinical nor clinical data are available to assess aspartame use in infants below 12 weeks of age.

At high doses codeine has most of the disadvantages of morphine, including respiratory depression. Codeine can produce drug dependence of the morphine type, and therefore has the potential for being abused. Prolonged regular use, except under medical supervision, may lead to physical and psychological dependence (addiction) and result in withdrawal symptoms, such as restlessness and irritability once the drug is stopped. Codeine may impair the mental/or physical abilities required for the performance of potentially hazardous tasks.

Severe liver damage may occur if the maximal daily dose is exceeded, if Tylenol is taken together with another paracetamol-containing product, or if Tylenol is taken while consuming large amounts of alcohol.

Patients positively identified with aspirin induced asthma, or who have ever experienced an asthmatic reaction to aspirin or non-steroidal anti-inflammatory drugs (NSAIDs) or are at high risk of aspirin induced asthma should avoid all products that contain aspirin or NSAIDs indefinitely. In these patients paracetamol should be recommended in low or moderate dose (< 1000 mg in a single dose) unless contraindicated. Although paracetamol might logically be presumed to be the best alternative analgesic in patients with aspirin sensitivity, cross reactions have been reported.

CYP2D6 metabolism

Codeine is metabolised by the liver enzyme CYP2D6 into morphine, its active metabolite. If a patient has a deficiency or is completely lacking this enzyme an adequate analgesic effect will not be obtained. Estimates indicate that up to 7% of the Caucasian population may have this deficiency. However, if the patient is an extensive or ultra-rapid metaboliser there is an increased risk of developing side effects of opioid toxicity even at commonly prescribed doses. These patients convert codeine into morphine rapidly resulting in higher than expected serum morphine levels. General symptoms of opioid toxicity include confusion, somnolence, shallow breathing, small pupils, nausea, vomiting, constipation and lack of appetite. In severe cases this may include symptoms of circulatory and respiratory depression, which may be life-threatening and very rarely fatal.

Estimates of prevalence of ultra-rapid metabolisers in different populations are summarized below:

Population	Prevalence %
African/Ethiopian	29%
African American	3.4% to 6.5%
Asian	1.2% to 2%
Caucasian	3.6% to 6.5%
Greek	6.0%
Hungarian	1.9%
Northern European	1%-2%

Abrupt withdrawal of opioids from persons physically dependent on them precipitates a withdrawal syndrome, the severity of which depends on the individual, the drug used, the size and frequency of the dose, and the duration of drug use.

Patients should be advised that immediate medical advice should be sought in the event of an overdose, because of the risk of delayed, serious liver damage. They should be advised not to exceed the recommended dose, not to take other paracetamol-containing products concurrently, to consult their doctor if symptoms persist and to keep the product out of the reach of children.

The long term use of high doses of combined codeine – paracetamol has been associated with the occurrence of deafness.

Paediatric population:

Tylenol should be used with extreme caution in adolescents between 12 and 18 years. An alternative medicine should be considered if at all possible.

Post-operative use in children

There have been reports in the published literature that codeine given post-operatively in children after tonsillectomy and/or adenoidectomy for obstructive sleep apnoea, led to rare, but life-threatening adverse events including death (see also section 4.3). All children received doses of codeine that were within the appropriate dose range; however there was evidence that these children were either ultrarapid or extensive metabolisers in their ability to metabolise codeine to morphine.

Adolescents between 12 and 18 years with compromised respiratory function

Codeine is not recommended for use in adolescents between 12 and 18 years in whom respiratory function might be compromised including neuromuscular disorders, severe cardiac or respiratory conditions, upper respiratory or lung infections, multiple trauma or extensive surgical procedures or obesity. These factors may worsen symptoms of morphine toxicity.

4.5 Interaction with other medicinal products and other forms of interactions

Sedative medicines such as benzodiazepines or related drugs:

Patients receiving other central nervous system depressants (including other opioid analgesics, tranquillizers eg. Benzodiazepines), sedative hypnotics and alcohol) concomitantly with Tylex effervescent may exhibit an additive depressant effect as the effects of CNS depressants (including alcohol) may be potentiated by codeine. When such therapy is contemplated, the duration and dose of one or both agents should be reduced (see section 4.4).

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.

Paracetamol may increase the elimination half-life of chloramphenicol. Oral contraceptives may increase its rate of clearance.

Patients receiving other central nervous system depressants (including other opioid analgesics, tranquillisers, sedative hypnotics and alcohol) concomitantly with these tablets may exhibit an additive depressant effect as the effects of CNS depressants (including alcohol) may be potentiated by codeine. When such therapy is contemplated, the dose of one or both agents should be reduced.

Concurrent use of MAO inhibitors or tricyclic antidepressants with codeine may increase the effect of either the antidepressant or codeine. Concurrent use of anticholinergics and codeine may produce paralytic ileus.

Cases of serotonin syndrome, a potentially life-threatening condition, have been reported during concomitant use of opioids with serotonergic drugs (including selective serotonin reuptake inhibitor, serotonin-norepinephrine reuptake inhibitors, tricyclic antidepressants, and monoamine oxidase inhibitors). Similar cases have also been reported with codeine. This may occur within the recommended dose.

Therefore, caution is advised when paracetamol/codeine is coadministered with medicinal products that affect the serotonergic neurotransmitter systems. Patients should be monitored for the sign and symptoms suggestive of serotonin syndrome in case of coadministration of these drugs. If serotonin syndrome is suspected, treatment with paracetamol/codeine should be discontinued.

Concurrent use of MAO inhibitors or tricyclic antidepressants with codeine may increase the effect of either the antidepressant or codeine. Concurrent use of anticholinergics and codeine may produce paralytic ileus.

Concurrent use of codeine with quinidine, fluoxetine, paroxetine or sertraline may result in inhibition of CYP2D6 which may cause opioid toxicity.

Enzyme-inducing medicines, such as some antiepileptic drugs (phenytoin, phenobarbital, carbamazepine) have been shown in pharmacokinetic studies to reduce the plasma AUC of paracetamol to approximately 60 %. Other substances with enzyme-inducing properties, e.g. rifampicin and St. John's wort (hypericum) are also suspected of causing lowered concentrations of paracetamol. In addition, the risk of liver damage during treatment with maximum recommended doses of paracetamol will be higher in patients being treated with enzyme-inducing agents.

Concurrent use with centrally acting muscle relaxants may increase the risk of respiratory depression.

The speed of absorption of paracetamol may be increased by metoclopramide or domperidone and absorption reduced by cholestyramine.

The anti-coagulant effect of warfarin and other coumarins may be enhanced by prolonged regular daily use of paracetamol with increased risk of bleeding; occasional doses have no significant effect.

Paracetamol may increase the elimination half-life of chloramphenicol. Oral contraceptives may increase its rate of clearance.

Concurrent use of codeine with fluoxetine, paroxetine, sertraline, neuroleptics, bupropion and methadone may result in inhibition of CYP2D6 which results in a decrease of the morphine concentration and therefore a reduction or loss of analgesic effect of codeine.

4.6 Fertility, pregnancy and lactation

Pregnancy

These tablets are not recommended during pregnancy since safety in pregnant women has not been established.

Epidemiological studies have reported cases of various congenital malformations. However, due to the limitations of the published studies and contradictory conclusions from other epidemiological studies, the causal association cannot be confirmed. Studies in animals have shown reproductive toxicity.

Codeine has been shown to cross the placental barrier. Opioid analgesics may depress neonatal respiration and cause withdrawal effects in neonates of dependent mothers.

As a precautionary measure, use of Tylex Effervescent Tablets should be avoided during the third trimester of pregnancy and during labour.

Breast-feeding

Tylex Effervescent Tablets should not be used during breastfeeding (see section 4.3).

Paracetamol is excreted in breast milk but not in a clinically significant amount.

Codeine should not be used during breastfeeding (see section 4.3). At normal therapeutic doses codeine and its active metabolites may be present in breast milk at very low doses and are unlikely to adversely affect the breast fed infant. However, if the patient is an ultra-rapid metaboliser of CYP2D6, higher levels of the active metabolite, morphine may be present in breast milk and on very rare occasions may result in symptoms of opioid toxicity in the infant, which may be fatal. If symptoms of opioid toxicity develop in either the mother or the infant, then all codeine containing medicines should be stopped and alternative non-opioid analgesics prescribed. In severe cases consideration should be given to prescribing naloxone to reverse these effects.

4.7 Effects on ability to drive and use machines

Patients should be advised not to drive or operate machinery if affected by dizziness or sedation.

4.8 Undesirable effects

Reported adverse reactions seem more prominent in ambulatory than non-ambulatory patients and some of these effects may be alleviated if the patient lies down.

Codeine can produce common opioid effects including constipation, nausea, vomiting, dizziness, light-headedness, confusion, drowsiness and urinary retention. The frequency and severity are determined by dosage, duration of treatment and individual sensitivity. Tolerance and dependence can occur, especially with prolonged high dosage of codeine.

- Regular prolonged use of codeine is known to lead to addiction and tolerance. Symptoms of restlessness and irritability may result when treatment is then stopped.
- Prolonged use of a painkiller for headaches can make them worse.

A tabulated list of adverse reactions are outlined below:

The frequencies are defined as follows: 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).

System organ class	Frequency	Adverse reactions
Immune system disorders	Rare	Hypersensitivity including skin rash may occur
	Not known	Anaphylactic shock, angioedema
Blood and lymphatic system disorders	Rare	Agranulocytosis, thrombocytopenia
	Very Rare	Neutropenia, leucopenia
Psychiatric disorders	Common	Dysphoria, euphoria
	Unknown	Hallucination
Nervous system disorders	Common	Dizziness, light-headedness, sedation
Respiratory, thoracic and mediastinal disorders	Common	Shortness of breath, asthma
	Not known	Bronchospasm
Gastrointestinal disorders	Common	Nausea & vomiting, constipation, abdominal pain
	Rare	Pancreatitis
Skin and subcutaneous tissue disorders	Common	Pruritus, rash, urticaria
	Very rare	Very rare cases of serious skin reactions have been reported

In clinical use of paracetamol-containing products, blood dyscrasias (including thrombocytopenia and agranulocytosis) are reported rarely ($< 1/10,000$, $> 1/1,000$).

There have been cases of bronchospasm with paracetamol, but these are more likely in asthmatics sensitive to aspirin or other NSAIDs.

Deafness has been reported in patients after long term use of high doses of codeine – paracetamol.

Anaphylaxis, angioedema and toxic epidermal necrolysis have also been associated with the use of paracetamol.

Drug-induced pancreatitis associated with paracetamol has been reported in literature to be a rare reaction only occurring in patients taking in excess of the recommended doses. Literature reports have also associated cases of pancreatitis with codeine.

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 HPRA Pharmacovigilance, Earlsfort Terrace, IRL - Dublin 2; Tel: +353 1 6764971; Fax: +353 1 6762517. Website: www.hpra.ie; E-mail: medsafety@hpra.ie.

4.9 Overdose

Paracetamol

Paracetamol overdose can result in liver damage which may be fatal.

Symptoms generally appear within the first 24 hours and may comprise: nausea, vomiting, anorexia, pallor, and abdominal pain, or patients may be asymptomatic.

Overdose of paracetamol can cause liver cell necrosis likely to induce complete and irreversible necrosis, resulting in hepatocellular insufficiency, metabolic acidosis and encephalopathy which may lead to coma and death. Simultaneously, increased levels of hepatic transaminases (AST, ALT), lactate dehydrogenase and bilirubin are observed together with increased prothrombin levels that may appear 12 to 48 hours after administration.

Liver damage is likely in patients who have taken more than the recommended amounts of paracetamol. It is considered that excess quantities of toxic metabolite become irreversibly bound to liver tissue.

Some patients may be at increased risk of liver damage from paracetamol toxicity:

Risk factors include;

- Patients with liver disease
- Elderly patients

- Young children
- Patients receiving long-term treatment with carbamazepine, phenobarbitone, phenytoin, primidone, rifampicin, St John's Wort or other drugs that induce liver enzymes.
- Patients who regularly consume ethanol in excess of recommended amounts
- Patients with glutathione depletion e.g. eating disorders, cystic fibrosis, HIV infection, starvation, cachexia

Acute renal failure with acute tubular necrosis may also develop.

Cardiac arrhythmias and pancreatitis have also been reported.

Emergency Procedure:

Immediate transfer to hospital.

Blood sampling to determine initial paracetamol plasma concentration. In the case of a single acute overdose, paracetamol plasma concentration should be measured 4 hours post ingestion. Administration of activated charcoal should be considered if the overdose of paracetamol has been ingested within the previous hour.

The antidote N-acetylcysteine, should be administered as soon as possible in accordance with national treatment guidelines.

Symptomatic treatment should be implemented.

Codeine

Simultaneous ingestion of alcohol and psychotropic drugs will potentiate the effects of overdosage.

Symptoms:

Serious overdose with codeine is characterised by respiratory depression, pin-point size pupils (miosis) extreme somnolence progressing to stupor or coma, skeletal muscle flaccidity, cold and clammy skin and sometimes bradycardia and hypotension. In severe overdose with codeine, apnoea, circulatory collapse, cardiac arrest and death may occur.

Management:

Primary attention should be given to the re-establishment of adequate respiratory exchange through the provision of a patent airway and the institution of controlled ventilation. Oxygen, intravenous fluids, vasopressors and other supportive measures should be employed as indicated. Opioid antagonists may be employed. Gastric lavage should be considered. Patients should remain under observation, as per hospital guidelines and on a case per case basis.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

ATC Code: N02A J06

Paracetamol has analgesic and antipyretic actions similar to those of aspirin with weak anti-inflammatory effects. Paracetamol is only a weak inhibitor of prostaglandin biosynthesis, although there is some evidence to suggest that it may be more effective against enzymes in the CNS than those in the periphery. This fact may partly account for its well documented ability to reduce fever and to induce analgesia, effects that involve actions on neural tissues. Single or repeated therapeutic doses of paracetamol have no effect on the cardiovascular and respiratory systems.

Acid-based changes do not occur and gastric irritation, erosion or bleeding is not produced as may occur after salicylates. There is only a weak effect upon platelets and no effect on bleeding time or the excretion of uric acid.

Codeine is a centrally acting weak analgesic. Codeine exerts its effect through microgram opioid receptors, although codeine has low affinity for these receptors, and its analgesic effect is due to its conversion to morphine.

The major effect is on the CNS and the bowel. The effects are remarkably diverse and include analgesia, drowsiness, changes in mood, respiratory depression, decreased gastrointestinal motility, nausea, vomiting and alterations of the endocrine and autonomic nervous systems. The relief of pain is relatively selective, in that other sensory modalities, (touch, vibration, vision, hearing etc.) are not obtunded. Codeine, particularly in combination with other analgesics such as paracetamol, has been shown to be effective in acute nociceptive pain.

5.2 Pharmacokinetic properties

Paracetamol is readily absorbed from the gastro-intestinal tract with peak plasma concentration occurring about 30 minutes to 2 hours after ingestion. It is metabolised in the liver and excreted in the urine mainly as the glucuronide and sulphate conjugates. Less than 5% is excreted as unchanged paracetamol. The elimination half-life varies from about 1 to 4 hours. Plasma-protein binding is negligible at usual therapeutic concentrations but increases with increasing concentrations.

A minor hydroxylated metabolite which is usually produced in very small amounts by mixed-function oxidases in the liver and which is usually detoxified by conjugation with liver glutathione may accumulate following paracetamol overdosage and cause liver damage.

Codeine and its salts are absorbed from the gastro intestinal tract. Ingestion of codeine phosphate hemihydrate produces peak plasma codeine concentrations in about one hour. Codeine is metabolised by O- & N-demethylation in the liver to morphine and norcodeine. Codeine and its metabolites are excreted almost entirely by the kidney, mainly as conjugates with glucuronic acid.

The plasma half-life has been reported to be between 3 and 4 hours after administration by mouth or intravascular injection.

5.3 Preclinical safety data

Conventional studies using the currently accepted standards for the evaluation of paracetamol toxicity to reproduction and development are not available.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Anhydrous citric acid
Sodium hydrogen carbonate
Anhydrous sodium carbonate
Aspartame (E951)
Macrogol 6000
Magnesium stearate

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 package.

6.5 Nature and contents of container

Paper/aluminium laminate blister strips with cardboard carton.
Pack sizes: cardboard cartons containing 6, 8, 24, 30, 36, 42, 48, 90 or 100 strips of tablets.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal and other handling

No special requirements.

7 MARKETING AUTHORISATION HOLDER

UCB (Pharma) Ireland Limited
United Drug House
Magna Drive, Magna Business Park
Citywest Road
Dublin 24
Ireland

8 MARKETING AUTHORISATION NUMBER

PA0891/014/002

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