SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Boots Dry Cough Relief 2.5mg Lozenges

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Active ingredient	*mg/1oz*
Dextromethorphan Hydrobromide BP	2.5

3. PHARMACEUTICAL FORM

Lozenge

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Cough suppressant for the relief of acute non-productive (dry, tickly) cough associated with respiratory tract infection.

For oral administration.

4.2 Posology and method of administration

Adults and children over 12 years: A lozenge should be sucked whenever the cough is troublesome. Not more than 10 lozenges should be taken in one day.

The normal adult dose is still appropriate in the elderly.

Children 6 to 12 years: Not more than 2 lozenges within any 4 hours, and not more than 7 in any one day.

This medicine is contraindicated in children under 6 years of age (see section 4.3).

Children of 6-12 years of age: not to be used for more than 5 days without the advice of a doctor. Parents or carers should seek medical attention if the child's condition deteriorates during treatment.

Warning: Do not exceed the stated dose.

Keep all medicines out of the sight and reach of children.

4.3 Contraindications

Hypersensitivity to the active substance or any of the excipients.

Dextromethorphan should not be given to subjects in, or at risk of developing respiratory failure.

Should not be taken by patients with liver disease.

Patients taking monoamine oxidase inhibitors (MAOIs) or within 14 days of stopping such treatment (see also section 4.5).

Patients taking selective serotonin reuptake inhibitors (SSRI's, see section 4.5).

Not to be used in children under the age of 6 years

4.4 Special warnings and precautions for use

Should be used with caution in atopic children due to histamine release.
Ask a doctor before use if you suffer from a chronic or persistent cough, if you have asthma or are suffering from an acute asthma attack or where cough is accompanied by excessive secretions.

Do not take with any other cough and cold medicine.

Use of dextromethorphan with alcohol or other CNS depressants may increase the effects on the CNS and cause toxicity in relatively smaller doses.

Drug dependence, tolerance and potential for abuse

For all patients, prolonged use of this product may lead to drug dependence (addiction), even at therapeutic doses. The risks are increased in individuals with current or past history of substance misuse disorder (including alcohol misuse) or mental health disorder (e.g., major depression).

Drug withdrawal syndrome

The drug withdrawal syndrome is characterised by some or all of the following: restlessness, lacrimation, rhinorrhoea, yawning, perspiration, chills, myalgia, mydriasis and palpitations. Other symptoms may also develop including irritability, agitation, anxiety, hyperkinesia, tremor, weakness, insomnia, anorexia, abdominal cramps, nausea, vomiting, diarrhoea, increased blood pressure, increased respiratory rate or heart rate.

Dextromethorphan is metabolised by hepatic cytochrome P450 2D6. The activity of this enzyme is genetically determined. About 10% of the general population are poor metabolisers of CYP2D6. Poor metabolisers and patients with concomitant use of CYP2D6 inhibitors may experience exaggerated and/or prolonged effects of dextromethorphan. Caution should therefore be exercised in patients who are slow metabolisers of CYP2D6 or use CYP2D6 inhibitors (see also section 4.5).

If symptoms do not go away talk to your doctor.

Serotonin Syndrome

Serotonergic effects, including the development of a potentially life-threatening serotonin syndrome, have been reported for dextromethorphan with concomitant administration of serotonergic agents, such as selective serotonin re-uptake inhibitors (SSRIs), drugs which impair metabolism of serotonin (including monoamine oxidase inhibitors (MAOIs)) and CYP2D6 inhibitors.

Serotonin syndrome may include mental-status changes, autonomic instability, neuromuscular abnormalities, and/or gastrointestinal symptoms.

If serotonin syndrome is suspected, treatment with Boots Dry Cough Relief 2.5mg Lozenges should be discontinued.

Paediatric population
Serious adverse events may occur in children in case of overdose including neurological disorders. Caregivers should be advised not to exceed the recommended dose.

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

Not to be used in patients taking monoamine oxidase inhibitors or within 14 days of stopping treatment as there is a risk of serotonin syndrome (pyrexia, hypertension, arrhythmias) when MAOIs are taken in combination with dextromethorphan.
(Severe and sometimes fatal reactions have been reported following administration of dextromethorphan to patients receiving MAOIs (see also section 4.3)).

Dextromethorphan might exhibit additive CNS depressant effects when co-administered with alcohol, antihistamines, psychotropics, and other CNS depressant drugs.

CYP2D6 inhibitors
Dextromethorphan is metabolized by CYP2D6 and has an extensive first-pass metabolism. Concomitant use of potent CYP2D6 enzyme inhibitors can increase the dextromethorphan concentrations in the body to levels multifold higher than normal. This increases the patient's risk for toxic effects of dextromethorphan (agitation, confusion, tremor, insomnia, diarrhoea and respiratory depression) and development of serotonin syndrome. Potent CYP2D6 enzyme inhibitors include fluoxetine, paroxetine, quinidine and terbinafine. In concomitant use with quinidine, plasma concentrations of dextromethorphan have increased up to 20-fold, which has increased the CNS adverse effects of the agent. Amiodarone, flecaninde and propafenone, sertraline, bupropion, methadone, cinacalcet, haloperidol, perphenazine and thioridazine also have similar effects on the metabolism of dextromethorphan. If concomitant use of CYP2D6 inhibitors and dextromethorphan is necessary, the patient should be monitored and the dextromethorphan dose may need to be reduced.

4.6 Fertility, pregnancy and lactation

There is no or inadequate evidence of the safety of dextromethorphan in human pregnancy and therefore the lozenges should not be used during this period. No information is available on the secretion of

dextromethorphan into breast milk and it is recommended that the product should not be used by breast feeding mothers.

4.7 Effects on ability to drive and use machines

This medicine can impair cognitive function and can affect a patient's ability to drive safely. This class of medicine is in the list of drugs included in regulations under 5a of the Road Traffic Act 1988. 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
- It is an offence to drive while under the influence of this medicine
- However, you would not be committing an offence (called a 'statutory defence') if:

-The medicine has been prescribed to treat a medical or dental problem and
-You have taken it according to the instructions given by the prescriber and in the information provided with the medicine and
-It was not affecting your ability to drive safely

4.8 Undesirable effects

The following side effects may be associated with the use of dextromethorphan; occasional drowsiness, dizziness, excitation, mental confusion, convulsions, respiratory depression, vomiting, gastrointestinal disturbances (nausea and diarrhoea) and skin reactions including rash.

Psychiatric disorders:

Frequency unknown: Drug dependence (see section 4.4)

General disorders and administration site conditions:

Frequency unknown: drug withdrawal syndrome

4.9 Overdose

The effects in overdosage will be potentiated by simultaneous ingestion of alcohol and psychotropic drugs.

Symptoms and signs:
Dextromethorphan overdose may be associated with nausea, vomiting, dystonia, agitation, confusion, somnolence, stupor, nystagmus, cardiotoxicity (tachycardia, abnormal ECG including QTc prolongation), ataxia, toxic psychosis with visual hallucinations, hyperexcitability. Other observed symptoms include CNS depression. Dizziness, dysarthria (slurred speech), abdominal discomfort and hypotension.

In the event of massive overdose the following symptoms may be observed: coma, respiratory depression, convulsions.

Management:
-Activated charcoal can be administered to asymptomatic patients who have ingested overdoses of dextromethorphan within the preceding hour.

-For patients who have ingested dextromethorphan and are sedated or comatose, naloxone, in the usual doses for treatment of opioid overdose, can be considered.
-Benzodiazepines for seizures and benzodiazepines and external cooling measures for hyperthermia from serotonin syndrome can be used.
-Treatment of overdose should be symptomatic and supportive. Gastric lavage may be of use.

Information regarding children aged 6-12 years:
Naloxone has been used successfully to reverse central or peripheral opioid effects of dextromethorphan in children (0.01mg/kg body weight).

5. PHARMACOLOGICAL PROPERTIES

5.1. Pharmacodynamic Properties

Dextromethorphan is a cough suppressant.

5.2. Pharmacokinetic properties

Dextromethorphan is well-absorbed from the gastrointestinal tract, metabolised in the liver and excreted as both unchanged drug and demethylated metabolites.

Dextromethorphan undergoes rapid and extensive first-pass metabolism in the liver after oral administration. Genetically controlled O-demethylation (CYD2D6) is the main determinant of dextromethorphan pharmacokinetics in human volunteers.

It appears that there are distinct phenotypes for this oxidation process resulting in highly variable pharmacokinetics between subjects. Unmetabolised dextromethorphan, together with the three demethylated morphinan metabolites dextrorphan (also known as 3-hydroxy-N-methylmorphinan), 3-hydroxymorphinan and 3-methoxymorphinan have been identified as conjugated products in the urine.

Dextrorphan, which also has antitussive action, is the main metabolite. In some individuals metabolism proceeds more slowly and unchanged dextromethorphan predominated in the blood and urine.

5.3. Pre-clinical Safety Data

There are no preclinical data of relevance to the prescriber which are additional to that already included.

6. PHARMACEUTICAL PARTICULARS

6.1. List of Excipients

Star anise oil
Strong capsicum tincture
Levomenthol
Natural blackcurrant flavour 3109382
Anthocyanin
Sugar/glucose liquid sugar

6.2. Incompatibilities

None stated.

6.3 Shelf life

24 months

6.4 Special precautions for storage

Do not store above 30°C.

6.5. Nature and contents of container

A card carton containing two blister push-through packs consisting of PVC/PVDC blisters heat sealed to hard temper aluminium foil. There are 12 lozenges on each blister and two trays in each carton.

6.6 Special precautions for disposal

Not applicable.

7. MARKETING AUTHORISATION HOLDER

The Boots Company PLC
1 Thane Road West
Nottingham NG2 3AA

8. MARKETING AUTHORISATION NUMBER

PL 00014/0357

9. DATE OF FIRST AUTHORISATION / RENEWAL OF THE AUTHORISATION

First authorisation: 20 January 1988
Last renewal: 20 January 1993

10 DATE OF REVISION OF THE TEXT

21/04/2020