SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Benylin MUCUS Cough plus Decongestant Syrup

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 5 ml contains:

Pseudoephedrine hydrochloride	30 mg
Guaifenesin	100 mg

Each 5ml also contains:

Sucrose	3 g
Methyl Hydroxybenzoate (E 218)	5 mg
Propyl Hydroxybenzoate (E 216)	0.5 mg
Ethanol 96 %v/v	190 mg
Ponceau 4R (E 124)	0.25 mg
Sunset Yellow (E 110)	0.25 mg
Benzyl alcohol	0.02 mg

For the full list of excipients see section 6.1.

3 PHARMACEUTICAL FORM

A clear orange-red syrup.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

This product is indicated for the symptomatic relief of upper respiratory tract disorders accompanied by productive cough, which are benefited by the combination of a decongestant of the mucous membranes of the upper respiratory tract, especially the nasal mucosa and sinuses, and an expectorant.

4.2 Posology and method of administration

Posology
Adults and children aged 12 years and over:

10 ml syrup every 4 - 6 hours up to 4 times a day.

Maximum daily dose: 40 ml

Children under 12 years:

This product is contraindicated in children under the age of 12 years (see section 4.3).

The elderly:

Normal adult dosage is appropriate, [See Pharmacokinetics in the elderly, section 5.2].

Hepatic dysfunction:

Experience with the use of the product suggests normal adult dosage is appropriate, although it may be prudent to exercise caution in the presence of severe hepatic impairment, [See Pharmacokinetics in Hepatic impairment, section 5.2].

Renal dysfunction:

Caution should be exercised when administering this product to patients with mild to moderate renal impairment, particularly if accompanied by cardiovascular disease, [See Pharmacokinetics in Renal Impairment, section 5.2].

Do not exceed the stated dose.

Method of Administration

For oral use

4.3 Contraindications

This product is contraindicated in individuals with known hypersensitivity to guaifenesin or pseudoephedrine, or to any of the excipients listed in section 6.1.

This product is contraindicated in individuals with cardiovascular disease including hypertension and individuals taking beta blockers (see section 4.5).

This product is contraindicated in individuals who are concomitantly taking other sympathomimetic decongestants.

This product is contraindicated in individuals with diabetes mellitus, closed angle glaucoma, hyperthyroidism or phaeochromocytoma.

This product is contraindicated in individuals who are taking, or have taken, monoamine oxidase inhibitors within the preceding 14 days. The concomitant use of pseudoephedrine and this type of product may cause a rise in blood pressure and/or hypertensive crisis (see Section 4.5).

Severe acute or chronic kidney disease/renal failure

Not to be used in children under the age of 12 years.

4.4 Special warnings and precautions for use

Patients with thyroid disease who are receiving thyroid hormones should not take pseudoephedrine unless directed by a physician.

Patients with the following conditions should be advised to consult a physician before using this product: difficulty in urination and/or enlargement of the prostate; a respiratory condition such as emphysema, chronic bronchitis or acute or chronic bronchial asthma.

This product should be not used for persistent or chronic cough, such as occurs with asthma, or emphysema where cough is accompanied by excessive secretions, unless directed by a physician.

Patients should be advised to consult a physician if their cough lasts for more than 5 days or comes back, or is accompanied by a fever, rash or persistent headache.

Caution should be exercised when using the product in the presence of severe hepatic impairment or moderate to severe renal impairment (particularly if accompanied by cardiovascular disease), [See section 5.2], or occlusive vascular disease.

If any of the following occur, this product should be stopped

- Hallucinations
- Restlessness
- Sleep disturbances

Severe Skin reactions: Severe skin reactions such as acute generalized exanthematous pustulosis (AGEP) may occur with pseudoephedrine-containing products. This acute pustular eruption may occur within the first 2 days of treatment, with fever, and numerous, small, mostly non-follicular pustules arising on a widespread oedematous erythema and mainly localized on the skin folds, trunk, and upper extremities. Patients should be carefully monitored. If signs and symptoms such as pyrexia, erythema, or many small pustules are observed, administration of this medicine should be discontinued, and appropriate measures taken if needed.

Ischaemic colitis: Some cases of ischaemic colitis have been reported with pseudoephedrine. Pseudoephedrine should be discontinued, and medical advice sought if sudden abdominal pain, rectal bleeding or other symptoms of ischaemic colitis develop.

Ischaemic optic neuropathy: Cases of ischaemic optic neuropathy have been reported with pseudoephedrine. Pseudoephedrine should be discontinued if sudden loss of vision or decreased visual acuity such as scotoma occurs.

Posterior reversible encephalopathy syndrome (PRES) and reversible cerebral vasoconstriction syndrome (RCVS)

Cases of PRES and RCVS have been reported with the use of pseudoephedrine-containing products (see section 4.8). The risk is increased in patients with severe or uncontrolled hypertension, or with severe acute or chronic kidney disease/renal failure (see section 4.3).

Pseudoephedrine should be discontinued and immediate medical assistance sought if the following symptoms occur: sudden severe headache or thunderclap headache,

nausea, vomiting, confusion, seizures and/or visual disturbances. Most reported cases of PRES and RCVS resolved following discontinuation and appropriate treatment.

Contains 3 g of sucrose per 5 ml. This should be taken into account in patients with diabetes mellitus. Patients with rare hereditary problems of fructose intolerance, glucose-galactose malabsorption or sucrose-isomaltase insufficiency should not take this medicine.

This medicine contains less than 1 mmol sodium (23 mg) per 5 ml, that is to say essentially 'sodium-free'.

This medicine contains 0.02 mg benzyl alcohol in each 5 ml. Benzyl alcohol may cause allergic reactions. Ask your doctor or pharmacist for advice if you are pregnant or breast□feeding. This is because large amounts of benzyl alcohol can build-up in your body and may cause side effects (called "metabolic acidosis"). High volumes should be used with caution and only if necessary, especially in subjects with liver or kidney impairment because of the risk of accumulation and toxicity (metabolic acidosis).

This product contains Ponceau 4R (E124) red colouring and sunset yellow (E110) which may cause allergic reactions.

This product contains Methyl Hydroxybenzoate (E 218) and Propyl Hydroxybenzoate (E 216) which may cause allergic reactions (possibly delayed).

This medicine contains 190 mg of alcohol (ethanol) in each 5 ml. The amount in 5 ml of this medicine is equivalent to less than 5 ml beer or 2 ml wine.

The small amount of alcohol in this medicine will not have any noticeable effects.

Not more than 4 doses should be given in any 24 hours.

Do not exceed the stated dose.

Do not take with any other cough and cold medicine.

4.5 Interaction with other medicinal products and other forms of interaction

MAOIs and/or RIMAs: Pseudoephedrine exerts its vasoconstricting properties by stimulating α-adrenergic receptors and displacing noradrenaline from neuronal storage sites. Since monoamine oxidase inhibitors (MAOIs) impede the metabolism of sympathomimetic amines and increase the store of releasable noradrenaline in adrenergic nerve endings, MAOIs may potentiate the pressor effect of pseudoephedrine. This product should not be used in patients taking monoamine inhibitors or within 14 days of stopping treatment as there is an increased risk of hypertensive crisis.

Moclobemide: Risk of hypertensive crisis.

Concomitant use of this product with tricyclic antidepressants, sympathomimetic agents (such as decongestants, appetite suppressants and amphetamine-like psychostimulants) may occasionally cause a rise in blood pressure. [See section 4.3].

Antihypertensives: Because of its pseudoephedrine content, this product may partially reverse the hypotensive action of antihypertensive drugs which interfere with sympathetic activity including bretylium, betanidine, guanethidine, debrisoquine, methyldopa, adrenergic neurone blockers and beta blockers, [See section 4.4].

Oxytocin: Risk of hypertension.

Cardiac glycosides: Increased risk of dysrhythmias.

Ergot alkaloids (ergotamine & methysergide): Increased risk of ergotism.

Anticholinergic drugs: Enhances effects of anticholinergic drugs (such as tricyclic antidepressants).

Anaesthetic agents: Concurrent use with halogenated anaesthetic agents such as chloroform, cyclopropane, halothane, enflurane or isoflurane may provoke or worsen ventricular arrhythmias.

If urine is collected within 24 hours of a dose of this product a metabolite of guaifenesin may cause a colour interference with laboratory determinations of urinary 5-hydroxyindoleacetic acid (5-HIAA) and vanillylmandelic acid (VMA).

4.6 Fertility, pregnancy and lactation

This product should not be used during pregnancy or lactation unless the potential benefit of treatment to the mother outweighs the possible risks to the developing foetus or breastfeeding infant.

Pregnancy

There are no adequate and well-controlled studies in pregnant women for guaifenesin, pseudoephedrine, or the combination of guaifenesin and pseudoephedrine.

Breastfeeding

Pseudoephedrine is excreted in breast milk in small amounts but the effect of this on breast-fed infants is not known. It has been estimated that approximately 0.4 to 0.7 % of a single 60 mg dose of pseudoephedrine ingested by a nursing mother will be excreted in the breast milk over 24 hours. Data from a study of lactating mothers taking 60 mg pseudoephedrine every 6 hours suggests that from 2.2 to 6.7% of the maximum daily dose (240 mg) may be available to the infant from a breastfeeding mother.

Guaifenesin is excreted in breast milk in small amounts with no effect expected on the infant.

4.7 Effects on ability to drive and use machines

It is not known if this product has an effect on the ability to drive or operate machinery.

4.8 Undesirable effects

Placebo-controlled studies with sufficient adverse event data were not available for the combination of guaifenesin and pseudoephedrine.

Adverse drug reactions identified during clinical trials and post-marketing experience with guaifenesin, pseudoephedrine, or the combination of guaifenesin and pseudoephedrine are listed below by System Organ Class (SOC).

The frequencies are defined according to the following convention:

Very common ≥1/10

Common ≥1/100 and < 1/10

Uncommon ≥1/1,000 and <1/100

Rare ≥1/10,000 and <1/1,000

Very rare <1/10,000

Not known (cannot be estimated from the available data).

ADRs are presented by frequency category based on 1) incidence in adequately designed clinical trials or epidemiology studies, if available, or 2) when incidence cannot be estimated, frequency category is listed as 'Not known'

System Organ Class (SOC)	**Adverse Drug Reaction (Preferred Term)**	**Frequency**
Immune System Disorders	Hypersensitivity (Cross-sensitivity may occur with other sympathomimetics)	Not known
Psychiatric Disorders	Insomnia	Common
	Nervousness	Common
	Anxiety	Not known
	Euphoric mood	Not known
	Excitability	Not known
	Hallucinations	Not known
	Irritability	Not known
	Paranoid delusions	Not known
	Restlessness	Not known
	Sleep disorder	Not known
Nervous System Disorders	Headache	Very common
	Dizziness	Common
	Cerebrovascular accident	Not known

	Paraesthesia	Not known
	Posterior reversible encephalopathy syndrome (PRES) (see section 4.4) /reversible cerebral vasoconstriction syndrome (RCVS) (see section 4.4)	Not known
	Psychomotor hyperactivity	Not known
	Somnolence	Not known
	Tremor	Not known
Eye Disorders	Ischaemic optic neuropathy	Not known
Cardiac Disorders	Dysrhythmias	Not known
	Myocardial infarction/myocardial ischaemia	Not known
	Palpitations	Not known
	Tachycardia	Not known
Vascular Disorders	Hypertension	Not known
Gastrointestinal Disorders	Dry mouth	Common
	Nausea	Common
	Abdominal pain	Not known
	Diarrhoea	Not known
	Ischaemic colitis	Not known
	Vomiting	Not known
Skin and Subcutaneous Tissue Disorders	Angioedema	Not known
	Pruritus	Not known
	Rash	Not known
	Severe skin reactions, including acute generalised exanthematous pustulosis (AGEP)	Not known
	Urticaria	Not known
Renal and Urinary Disorders	Dysuria	Not known
	Urinary Retention (in men in whom prostatic enlargement could have been an important predisposing factor)	Not known

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: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.

4.9 Overdose

Signs and symptoms

The effects of acute toxicity from this product may include drowsiness, irritability, restlessness, tremor, palpitations, convulsions, hypertension, difficulty with micturition, gastro-intestinal discomfort, nausea and vomiting.

Guaifenesin

When taken in excess, guaifenesin may cause renal calculi.

Pseudoephedrine

Overdose may result in:

Hyperglycaemia, hypokalaemia, CNS stimulation, insomnia; irritability, restlessness, anxiety, agitation; confusion, delirium, hallucinations, psychoses, seizures, tremor, intracranial haemorrhage including intracerebral haemorrhage, drowsiness in children, mydriasis, palpitations, tachycardia, reflex bradycardia, supraventricular and ventricular arrhythmias, dysrhythmias, myocardial infarction, hypertension, vomiting, ischaemic bowel infarction, acute renal failure, difficulty in micturition.

Management

Necessary measures should be taken to maintain and support respiration and control convulsions. Catheterisation of the bladder may be necessary. If desired, the elimination of pseudoephedrine can be accelerated by acid diuresis or by dialysis.

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Sympathomimetics, pseudoephedrine, combinations
ATC code: R01BA52

Pseudoephedrine has direct and indirect sympathomimetic activity and is an orally effective upper respiratory decongestant. Pseudoephedrine is substantially less potent than ephedrine in producing both tachycardia and elevation of systolic blood pressure and considerably less potent in causing stimulation of the central nervous system. Pseudoephedrine produces its decongestant effect within 30 minutes, persisting for at least 4 hours.

Guaifenesin is thought to exert its pharmacological action by stimulating receptors in the gastric mucosa. This increases the output from secretory glands of the gastrointestinal system and reflexly increases the flow of fluids from glands lining the

respiratory tract. The result is an increase in volume and decrease in viscosity of bronchial secretions. Other actions may include stimulating vagal nerve endings in bronchial secretory glands and stimulating certain centres in the brain which in mm enhance respiratory fluid flow. Guaifenesin produces its expectorant action within 24 hours.

5.2 Pharmacokinetic properties

Absorption

Pseudoephedrine

Pseudoephedrine is well absorbed from the gut following oral administration. After the administration of one 60 mg pseudoephedrine tablet to healthy adult volunteers, the Cmax for pseudoephedrine was approximately 180 ng/ml with tmax occurring at approximately 1.5 - 2.0 hours.

Guaifenesin

Guaifenesin is well absorbed from the gastro-intestinal tract following oral administration, although limited information is available on its pharmacokinetics. After the administration of 600 mg guaifenesin to healthy adult volunteers, the Cmax was approximately 1.4 micrograms/ml, with tmax occurring approximately 15 minutes after drug administration.

Distribution

The apparent volume of distribution of pseudoephedrine (Vd/F) was approximately 2.8 l/kg. No information is available on the distribution of guaifenesin in humans.

Metabolism and elimination

Pseudoephedrine

The t½ was approximately 5.5 hours. Pseudoephedrine is partly metabolised in the liver by N-demethylation to norpseudoephedrine, an active metabolite. Pseudoephedrine and its metabolite are excreted in the urine; 55 % to 90 % of a dose is excreted unchanged. The apparent total body clearance of pseudoephedrine (Cl/F) was approximately 6 - 6.5 ml/min/kg. The rate of urinary elimination is accelerated when the urine is acidified. Conversely, as the urine pH increases, the rate of urinary elimination is slowed.

Guaifenesin

Guaifenesin appears to undergo both oxidation and demethylation. Following an oral dose of 600 mg guaifenesin to 3 healthy male volunteers, the t½ was approximately 1 hour and the drug was not detectable in the blood after approximately 8 hours.

Pharmacokinetics in Renal Impairment

Following the administration of a pseudoephedrine-containing product (8 mg acrivastine + 60 mg pseudoephedrine) to patients with varying degrees of renal impairment, the Cmax for pseudoephedrine increased approximately 1.5 fold in patients with moderate to severe renal impairment when compared to the Cmax in healthy volunteers. The tmax was not affected by renal impairment. The t½ increased 3 to 12 fold in patients with mild to severe renal impairment respectively, when compared to the t½ in healthy volunteers.

There have been no specific studies of this product, or guaifenesin in renally impaired patients.

Pharmacokinetics in Hepatic Impairment

There have been no specific studies of this product, guaifenesin or pseudoephedrine in hepatic impairment.

Pharmacokinetics in the Elderly

After the administration of a pseudoephedrine-containing product (8 mg acrivastine + 60 mg pseudoephedrine) to elderly volunteers, the t½ for pseudoephedrine was 1.4 fold that seen in younger healthy volunteers. The apparent Cl/F was 0.8 fold that seen in younger healthy volunteers, and the Vd/F was essentially unchanged.

There have been no specific studies of this product, pseudoephedrine or guaifenesin in the elderly.

5.3 Preclinical safety data

The active ingredients of this product are well known constituents of medicinal products and their safety profiles are well documented. The results of pre-clinical studies do not add anything of relevance for therapeutic purposes.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Sucrose
Glycerol
Methyl Hydroxybenzoate (E 218)
Propyl Hydroxybenzoate (E 216)
Menthol
Ethanol 96 %v/v
Wild Cherry flavour (Sodium, Benzyl Alcohol)
Ponceau 4R (E 124)
Sunset Yellow (E 110)
Purified Water

6.2 Incompatibilities

None known

6 PHARMACEUTICAL PARTICULARS

6.3 Shelf life

3 years

6.4 Special precautions for storage

Do not store above 25°C. Keep container in the outer carton. Do not refrigerate.

6.5 Nature and contents of container

100 ml amber glass bottles with a 2 piece or a 3 piece plastic child resistant, tamper evident closure fitted with a polyvinylidene chloride (PVDC) faced wad.
A spoon with a 5ml and a 2.5ml measure is supplied with this product.

6.6 Special precautions for disposal

No special requirements for disposal.
Any unused product or waste material should be disposed of in accordance with local requirements.

7 MARKETING AUTHORISATION HOLDER

McNeil Products Limited

50 – 100 Holmers Farm Way
High Wycombe
Buckinghamshire
HP12 4EG
UK

8 MARKETING AUTHORISATION NUMBER(S)

PL 15513/0022

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

27.09.1997

10 DATE OF REVISION OF THE TEXT

04/11/2024