For the use only of Registered Medical Practitioners or a Hospital or a Laboratory

AUGMENTIN DUO

1. GENERIC NAME

Amoxycillin and Potassium Clavulanate Oral Suspension IP 228.5 mg/5 mL

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 5 mL of the reconstituted suspension contains:

Amoxycillin Trihydrate IP equivalent to Amoxycillin 200 mg
Potassium Clavulanate Diluted IP equivalent to Clavulanic Acid 28.5 mg

List of Excipients
Xanthan gum, hydroxy propyl methyl cellulose E-5, colloidal anhydrous silica, succinic acid, silicon dioxide, flavour raspberry dry powder, flavour orange dry powder PFW, flavour orange dry powder DRAGACO, flavour golden syrup dry powder, aspartame.

For important information about some of these excipients see *4.4 Special Warnings and Precautions for Use.*

3. DOSAGE FORM AND STRENGTH

Powder for oral suspension.

Strength: 228.5 mg/5 mL

4. CLINICAL PARTICULARS

4.1 Therapeutic Indications

AUGMENTIN should be used in accordance with local official antibiotic-prescribing guidelines and local susceptibility data.

AUGMENTIN DUO, for twice daily oral dosing, is indicated for short term treatment of bacterial infections at the following sites when amoxicillin resistant beta-lactamase producing strains are suspected as the cause.

Upper Respiratory Tract Infections (including ENT) e.g. recurrent tonsillitis, sinusitis, otitis media.

Lower Respiratory Tract Infections e.g. acute exacerbation of chronic bronchitis, lobar and bronchopneumonia

Urinary Tract Infections e.g. cystitis, urethritis, pyelonephritis

Skin and Soft Tissue Infections e.g. cellulitis, animal bites

Dental infections e.g. severe dental abscess with spreading cellulitis

Susceptibility to *AUGMENTIN* will vary with geography and time (see *5. Pharmacological Properties, 5.2 Pharmacodynamic Properties* for further information). Local susceptibility data should be consulted where available, and microbiological sampling and susceptibility testing performed where necessary.

Mixed infections caused by amoxycillin-susceptible organisms in conjunction with *AUGMENTIN* susceptible beta-lactamase-producing organisms may be treated with *AUGMENTIN DUO*. These infections should not require the addition of another antibiotic resistant to beta-lactamases.

4.2 Posology and Method of Administration

Dosage depends on the age, weight and renal function of the patient and the severity of the infection.

Dosages are expressed throughout in terms of amoxycillin/clavulanate content except when doses are stated in terms of an individual component.

To minimize the potential gastrointestinal intolerance, administer at the start of a meal. The absorption of *AUGMENTIN* is optimized when taken at the start of a meal.

Treatment should not exceed 14 days without review.

Therapy can be started parenterally and continued with an oral preparation.

For preparation of the suspension see *8.5 Storage and Handling Information.*

The usual recommended daily dosage is:

- *Lower dose*: 25/3.6 to 45/6.4 mg/kg/day in two divided doses for mild to moderate infections (upper respiratory tract infections e.g. recurrent tonsillitis, lower respiratory infections and skin and soft tissue infections)

- *Higher dose*: 45/6.4 to 70/10 mg/kg/day in two divided doses for the treatment of more serious infections (upper respiratory tract infections e.g. otitis media and sinusitis, lower respiratory tract infections e.g. bronchopneumonia and urinary tract infections)

No clinical data are available on doses above 45/6.4 mg/kg/day in children under 2 years.

There is no clinical data for *AUGMENTIN DUO* to make dosage recommendations for children under 2 months old.

The tables below give dosage guidance for children.

Children 2 years and over

AUGMENTIN DUO		
Body weight (kg)	For lower dose range (mL every 12 hours)	For higher dose range (mL every 12 hours)
12 to 16	5	10
17 to 26	10	15

Children aged 2 months to under 2 years

AUGMENTIN DUO		
Body Weight (kg)	**Lower dose at 25/3.6 mg/kg/day (mL every 12 hours)**	**Higher dose at 45/6.4 mg/kg/day (mL every 12 hours)**
2	0.6	1.2
3	1.0	1.6
4	1.2	2.2
5	1.6	2.8
6	1.8	3.4
7	2.2	4.0
8	2.6	4.6
9	2.8	5.0
10	3.2	5.6
11	3.4	6.2
12	3.8	6.8
13	4.0	7.4
14	4.4	7.8
15	4.6	8.4

Renal Impairment

No adjustment in dose is required in patients with creatinine clearance greater than 30 mL/min.

AUGMENTIN DUO is not recommended in patients with a creatinine clearance of less than 30 mL/min.

Hepatic Impairment

Administer with caution; monitor hepatic function at regular intervals. There are, insufficient data on which to base a dosage recommendation.

4.3 Contraindications

AUGMENTIN is contraindicated

- in patients with a history of hypersensitivity to beta-lactams, e.g. penicillins and cephalosporins.

- in patients with a previous history of *AUGMENTIN*-associated jaundice/hepatic dysfunction.

4.4 Special Warnings and Precautions for Use

Before initiating therapy with *AUGMENTIN* careful enquiry should be made concerning previous hypersensitivity reactions to penicillins, cephalosporins, or other allergens.

Serious and occasionally fatal hypersensitivity reactions (including anaphylactoid and severe cutaneous adverse reactions) have been reported in patients on penicillin therapy. These reactions are more likely to occur in individuals with a history of penicillin hypersensitivity (see *4.3 Contraindications*). Hypersensitivity reactions can also progress to Kounis syndrome, a serious allergic reaction that can result in myocardial infarction. Presenting symptoms of such reactions can include chest pain occurring in association with an allergic reaction to *AUGMENTIN* (see *4.8 Undesirable Effects*). Drug-induced enterocolitis syndrome has been reported mainly in children receiving *AUGMENTIN* (see *4.8 Undesirable Effects*). Drug-induced enterocolitis syndrome is an allergic reaction with the leading symptom of protracted vomiting (1-4 hours after medicinal product administration) in the absence of allergic skin or respiratory symptoms. Further symptoms could comprise abdominal pain, lethargy, diarrhoea, hypotension or leucocytosis with neutrophilia. In severe cases, drug-induced enterocolitis syndrome can progress to shock. If an allergic reaction occurs, *AUGMENTIN* therapy must be discontinued and appropriate alternative therapy instituted.

Serious anaphylactic reactions require immediate emergency treatment with adrenaline. Oxygen, intravenous (i.v.) steroids and airway management (including intubation) may also be required.

AUGMENTIN should be avoided if infectious mononucleosis is suspected since the occurrence of a morbilliform rash has been associated with this condition following the use of amoxycillin.

Prolonged use may also occasionally result in overgrowth of non-susceptible organisms.

Pseudomembranous colitis has been reported with the use of antibiotics and may range in severity from mild to life-threatening. Therefore, it is important to consider its diagnosis in patients who develop diarrhoea during or after antibiotic use. If prolonged or significant diarrhoea occurs or the patient experiences abdominal cramps, treatment should be discontinued immediately and the patient investigated further.

Abnormal prolongation of prothrombin time [increased International Normalized Ratio (INR)] has been reported rarely in patients receiving *AUGMENTIN* and oral anticoagulants. Appropriate monitoring should be undertaken when anticoagulants are prescribed concurrently. Adjustments in the dose of oral anticoagulants may be necessary to maintain the desired level of anticoagulation.

Changes in liver function tests have been observed in some patients receiving *AUGMENTIN.* The clinical significance of these changes is uncertain but *AUGMENTIN* should be used with caution in patients with evidence of hepatic dysfunction.

Cholestatic jaundice, which may be severe, but is usually reversible, has been reported rarely. Signs and symptoms may not become apparent for up to six weeks after treatment has ceased.

In patients with renal impairment *AUGMENTIN DUO* is not recommended.

In patients with reduced urine output, crystalluria has been observed very rarely, predominantly with parenteral therapy. During the administration of high doses of amoxycillin, it is advisable to maintain adequate fluid intake and urinary output in order to reduce the possibility of amoxycillin crystalluria *(*see *4.9 Overdose)*.

AUGMENTIN DUO contains aspartame, which is a source of phenylalanine and so should be used with caution in patients with phenylketonuria.

4.5 Drug Interactions

Concomitant use of probenecid is not recommended. Probenecid decreases the renal tubular secretion of amoxycillin. Concomitant use with *AUGMENTIN* may result in increased and prolonged blood levels of amoxycillin but not of clavulanic acid.

Concomitant use of allopurinol during treatment with amoxycillin can increase the likelihood of allergic skin reactions. There are no data on the concomitant use of *AUGMENTIN* and allopurinol.

In common with other antibiotics, *AUGMENTIN* may affect the gut flora, leading to lower oestrogen reabsorption and reduced efficacy of combined oral contraceptives.

In the literature there are rare cases of increased international normalised ratio in patients maintained on acenocoumarol or warfarin and prescribed a course of amoxycillin. If co-administration is necessary, the prothrombin time or international normalised ratio should be carefully monitored with the addition or withdrawal of *AUGMENTIN*.

In patients receiving mycophenolate mofetil, reduction in pre-dose concentration of the active metabolite mycophenolic acid of approximately 50% has been reported following commencement of oral amoxycillin plus clavulanic acid. The change in pre-dose level may not accurately represent changes in overall MPA exposure.

Penicillins may reduce the excretion of methotrexate causing a potential increase in toxicity.

4.6 Use in Special Populations

Pregnancy
Reproduction studies in animals (mice and rats at doses up to 10 times the human dose) with orally and parenterally administered *AUGMENTIN* have shown no teratogenic effects. In a single study in women with preterm, premature rupture of the foetal membrane (pPROM), it was reported that prophylactic treatment with *AUGMENTIN* may be associated with an increased risk of necrotising enterocolitis in neonates. As with all medicines, use should be avoided in pregnancy, unless considered essential by the physician.

Lactation
AUGMENTIN may be administered during the period of lactation. With the exception of the risk of sensitisation, associated with the excretion of trace quantities in breast milk, there are no known detrimental effects for the breast-fed infant.

4.7 Effects on Ability to Drive and Use Machines

Adverse effects on the ability to drive or operate machinery have not been observed.

4.8 Undesirable Effects

Data from large clinical trials were used to determine the frequency of very common to rare undesirable effects. The frequencies assigned to all other undesirable effects (i.e., those occurring at <1/10,000) were mainly determined using post-marketing data and refer to a reporting rate rather than a true frequency.

The following convention has been used for the classification of frequency:

Very common ≥ 1/10
Common ≥ 1/100 to < 1/10
Uncommon ≥ 1/1000 to < 1/100
Rare ≥ 1/10,000 to < 1/1000
Very rare < 1/10,000

Infections and infestations

Common	Mucocutaneous candidiasis

Blood and lymphatic system disorders

Rare	Reversible leucopenia (including neutropenia) and thrombocytopenia
Very rare	Reversible agranulocytosis and haemolytic anaemia. Prolongation of bleeding time and prothrombin time.

Immune system disorders

Very rare	Angioneurotic oedema, anaphylaxis (see *4.4 Special Warnings and Precautions for Use*), serum sickness-like syndrome, hypersensitivity vasculitis (see also *Skin and subcutaneous tissue disorders*).

Nervous system disorders

Uncommon	Dizziness, headache
Very rare	Reversible hyperactivity, aseptic meningitis, convulsions. Convulsions may occur in patients with impaired renal function or in those receiving high doses.

Cardiac disorders

Very rare	Kounis syndrome (see *4.4 Special Warnings and Precautions for use.*)

Gastrointestinal disorders

Adults

Very common	Diarrhoea
Common	Nausea, vomiting

Children

Common	Diarrhoea, nausea, vomiting

All populations

Nausea is more often associated with higher oral dosages. If gastrointestinal reactions are evident, they may be reduced by taking *AUGMENTIN* at the start of a meal.

Uncommon	Indigestion
Very rare	Antibiotic-associated colitis (including pseudomembranous colitis and haemorrhagic colitis, drug-induced enterocolitis syndrome - See *4.4 Special Warnings and Precautions for use.)*
	Black hairy tongue
	Superficial tooth discolouration has been reported very rarely in children. Good oral hygiene may help to prevent tooth discolouration as it can usually be removed by brushing.

Hepatobiliary disorders

Uncommon	A moderate rise in AST and/or ALT has been noted in patients treated with beta-lactam class antibiotics, but the significance of these findings is unknown.
Very rare	Hepatitis and cholestatic jaundice. These events have been noted with other penicillins and cephalosporins.

Hepatic events have been reported predominantly in males and elderly patients and may be associated with prolonged treatment. These events have been very rarely reported in children.

Signs and symptoms usually occur during or shortly after treatment but in some cases may not become apparent until several weeks after treatment has ceased. These are usually reversible. Hepatic events may be severe and in extremely rare circumstances, deaths have been reported. These have almost always occurred in patients with serious underlying disease or taking concomitant medications known to have the potential for hepatic effects.

Skin and subcutaneous tissue disorders

Uncommon	Skin rash, pruritus, urticaria
Rare	Erythema multiforme

Very rare	Stevens-Johnson syndrome, toxic epidermal necrolysis, bullous exfoliative-dermatitis, acute generalised exanthemous pustulosis (AGEP), drug reaction with eosinophilia and systemic symptoms (DRESS), and symmetrical drug-related intertriginous and flexural exanthema (SDRIFE) (baboon syndrome) (see also *Immune system disorders*). If any hypersensitivity dermatitis reaction occurs, treatment should be discontinued. Linear IgA disease.

Renal and urinary disorders

Very rare	Interstitial nephritis, crystalluria (see *4.9 Overdose*)

4.9 Overdose

Gastrointestinal symptoms and disturbance of the fluid and electrolyte balances may be evident. Gastrointestinal symptoms may be treated symptomatically with attention to the water electrolyte balance.

Amoxycillin crystalluria, in some cases leading to renal failure, has been observed (see *4.4 Special Warnings and Precautions for Use*).

AUGMENTIN can be removed from the circulation by haemodialysis.

5. PHARMACOLOGICAL PROPERTIES

5.1 Mechanism of Action

Amoxycillin is a semisynthetic antibiotic with a broad spectrum of antibacterial activity against many gram-positive and gram-negative micro-organisms. Amoxycillin is, however, susceptible to degradation by beta-lactamases and therefore the spectrum of activity of amoxycillin alone does not include organisms which produce these enzymes.

Clavulanic acid is a beta-lactam, structurally related to the penicillins, which possesses the ability to inactivate a wide range of beta-lactamase enzymes commonly found in micro-organisms resistant to penicillins and cephalosporins. In particular, it has good activity against the clinically important plasmid mediated beta-lactamases frequently responsible for transferred drug resistance. It is generally less effective against chromosomally-mediated type 1 beta-lactamases.

The presence of clavulanic acid in amoxycillin-clavulanate formulations protects amoxycillin from degradation by beta-lactamase enzymes and effectively extends the antibacterial spectrum of amoxycillin to include many bacteria normally resistant to amoxycillin and other penicillins and cephalosporins. Thus amoxycillin-clavulanate possesses the distinctive properties of a broad spectrum antibiotic and a beta-lactamase inhibitor.

5.2 Pharmacodynamic Properties

Anatomical Therapeutic Chemical (ATC) code: J01CR02.
Pharmacotherapeutic group: Combinations of penicillins, incl. beta-lactamase inhibitors.

Resistance to many antibiotics is caused by bacterial enzymes which destroy the antibiotic before it can act on the pathogen. The clavulanate in *AUGMENTIN DUO* anticipates this defence mechanism by blocking the beta-lactamase enzymes, thus rendering the organisms sensitive to amoxycillin's rapid bactericidal effect at concentrations readily attainable in the body.

Clavulanate by itself has little antibacterial activity; however, in association with amoxycillin as *AUGMENTIN* it produces an antibiotic agent of broad spectrum with wide application in hospital and general practice.

In the list below, organisms are categorised according to their *in vitro* susceptibility to *AUGMENTIN*.

In vitro* susceptibility of micro-organisms to *AUGMENTIN
Where clinical efficacy of *AUGMENTIN* has been demonstrated in clinical trials this is indicated with an asterisk (*). Organisms that do not produce beta-lactamase are identified (with †). If an isolate is susceptible to amoxycillin, it can be considered susceptible to *AUGMENTIN*.
Commonly susceptible species
Gram-positive aerobes: *Bacillius anthracis* *Enterococcus faecalis* *Listeria monocytogenes* *Nocardia asteroides* *Streptococcus pyogenes**† *Streptococcus agalactiae**† *Streptococcus* spp. (other beta-hemolytic)*† *Staphylococcus aureus* (methicillin susceptible)* *Staphylococcus saprophyticus* (methicillin susceptible) Coagulase negative staphylococcus (methicillin susceptible)
Gram-negative aerobes: *Bordetella pertussis* *Haemophilus influenzae** *Haemophilus parainfluenzae* *Helicobacter pylori* *Moraxella catarrhalis** *Neisseria gonorrhoeae* *Pasteurella multocida* *Vibrio cholerae*
Other: *Borrelia burgdorferi* *Leptospira ictterohaemorrhagiae* *Treponema pallidum*

Gram positive anaerobes: *Clostridium* spp. *Peptococcus niger* *Peptostreptococcus magnus* *Peptostreptococcus micros* *Peptostreptococcus* spp.
Gram-negative anaerobes: *Bacteroides fragilis* *Bacteroides* spp. *Capnocytophaga* spp. *Eikenella corrodens* *Fusobacterium nucleatum* *Fusobacterium* spp. *Porphyromonas* spp. *Prevotella* spp.
Species for which acquired resistance may be a problem
Gram-negative aerobes: *Escherichia coli** *Klebsiella oxytoca* *Klebsiella pneumoniae** *Klebsiella* spp. *Proteus mirabilis* *Proteus vulgaris* *Proteus* spp. *Salmonella* spp. *Shigella* spp.
Gram-positive aerobes: *Corynebacterium* spp. *Enterococcus faecium* *Streptococcus pneumoniae**† Viridans group streptococcus
Inherently resistant organisms
Gram-negative aerobes: *Acinetobacter* spp. *Citrobacter freundii* *Enterobacter* spp. *Hafnia alvei* *Legionella pneumophila* *Morganella morganii* *Providencia* spp. *Pseudomonas* spp. *Serratia* spp. *Stenotrophomas maltophilia* *Yersinia enterolitica*
Others: *Chlamydia pneumoniae* *Chlamydia psittaci* *Chlamydia* spp. *Coxiella burnetti* *Mycoplasma* spp.

Infections caused by amoxycillin-susceptible organisms are amenable to *AUGMENTIN* treatment due to its amoxycillin content. Mixed infections caused by amoxycillin -susceptible organisms in conjunction with *AUGMENTIN*-susceptible beta-lactamase producing organisms may therefore be treated with *AUGMENTIN.*

5.3 Pharmacokinetic Properties

Absorption

The two components of *AUGMENTIN DUO*, amoxycillin and clavulanate, are each fully dissociated in aqueous solution at physiological pH. Both components are rapidly and well absorbed by the oral route of administration. Absorption of *AUGMENTIN* is optimised when taken at the start of a meal.

Amoxycillin serum concentrations achieved with *AUGMENTIN* are similar to those produced by the oral administration of equivalent doses of amoxycillin alone.

Distribution

The pharmacokinetics of the two components of *AUGMENTIN* are closely matched. Both clavulanate and amoxycillin have low levels of serum binding; about 70% remains free in the serum.
Doubling the dosage of *AUGMENTIN* approximately doubles the serum levels achieved.

6. NONCLINICAL PROPERTIES

6.1 Animal Toxicology and Pharmacology

No further information of relevance.

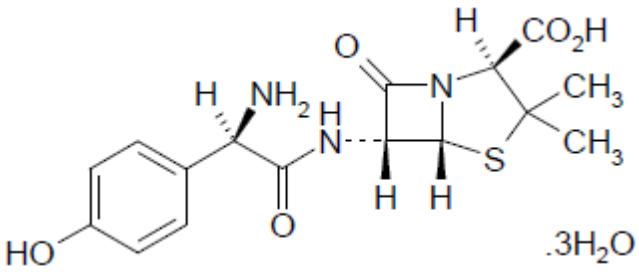
7. DESCRIPTION

AUGMENTIN (beta-lactam antibacterial penicillin coformulated with a beta-lactamase inhibitor) is an antibiotic agent with a notably broad spectrum of activity against the commonly occurring bacterial pathogens in general practice and hospital. The beta-lactamase inhibitory action of clavulanate extends the spectrum of amoxycillin to embrace a wider range of organisms, including many resistant to other beta-lactam antibiotics.

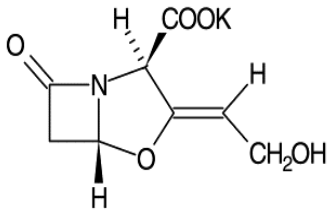
Chemical Structure
AUGMENTIN is a coformulation of amoxycillin trihydrate and potassium clavulanate.

Amoxycillin trihydrate

Chemical name	(2S,5R,6R)-6-[(R)-(-)-2-amino-2-(p-hydroxyphenyl) acetamido]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid trihydrate.

Structural formula	
Molecular formula	$C_{16}H_{19}N_3O_5S \cdot 3H_2O$
Relative molecular mass	365.4 (anhydrous) 419.4 (trihydrate form)

Potassium clavulanate

Chemical name	Potassium (Z)-(2R,5R)-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate.
Structural formula	
Molecular formula	$C_8H_8NO_5K$
Relative molecular mass	237.3 (as the potassium salt) 199.2 (as the free acid)

8. PHARMACEUTICAL PARTICULARS

8.1 Incompatibilities

There are no relevant data available.

8.2 Shelf Life

The expiry date is indicated on the label and packaging.

8.3 Packaging Information

Bottle in a carton.

8.4 Storage and Handling Information

Store in a well closed container at a temperature not exceeding 30°C, protected from moisture.
Do not use the product if seal on bottle is missing or not intact.

Do not use if powder / reconstituted solution turns pale yellow to brown colour.

This product comes in child-resistant packaging.

To open the bottle follow the instructions given below:

For more information open the link below:
bit.ly/GSK-India-CR2

Direction for Preparation: Shake the bottle to loosen powder. Then to make up to 30 mL, add boiled and cooled water to 2/3 of fill mark on bottle. Replace the cap and shake the bottle until all of the powder is suspended. Add more water until the level of the fill line is attained and shake again.
After reconstitution, close the bottle tightly and immediately keep in a refrigerator when not in use.

Reconstituted suspension should be stored in a refrigerator (2°-8°C) and used within seven days. Do not freeze.

For Paediatric use only.

Keep out of reach of children.

9. PATIENT COUNSELLING INFORMATION

Registered Medical Practitioners may counsel their patients (and/or patients' caregiver as applicable) about the special warnings and precautions for use, drug interactions, undesirable effects, and any relevant contra-indications of *AUGMENTIN DUO*. Patients (and/or patients' caregiver) may also be informed about posology, method of administration and storage/handling information as applicable.

10. DETAILS OF MANUFACTURER

The Manufacturing Site details are mentioned on the label and packaging.

For further information, please contact:
GlaxoSmithKline Pharmaceuticals Limited.
Registered Office:
Dr. Annie Besant Road, Worli,
Mumbai 400 030, India.

11. DETAILS OF PERMISSION OR LICENSE NUMBER WITH DATE

Manufacturing License number is indicated on the label and packaging.

12. DATE OF REVISION

4-DEC-2023

Trade marks are owned by or licensed to the GSK group of companies.

Version: AUG-SUS/PI/IN/2023/02

Adapted from Amoxicillin-clavulanate (Oral) GDS version 29 and Augmentin Suspension (Amoxicillin trihydrate - Potassium clavulanate) IPI version 17 dated 07 Sep 2023.