

Chapter 11

EAR, NOSE AND THROAT

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11:1 EAR, NOSE AND THROAT

Otitis externa is the inflammation of ear canal. Furuncle is a localized otitis externa, which is a staphylococcal infection of the hair follicle. Patient usually presents with severe pain and tenderness in the ear. Treatment consists of systemic antibiotics, analgesics and local heat.

Diffuse otitis externa is commonly seen in hot and humid climate. It is characterized by burning sensation in the ear followed by pain which is aggravated by movements of jaw. Ear starts oozing thin serous discharge which later becomes thick and purulent. Common organisms responsible for otitis externa are *Staph. aureus*, *Pseud. pyocyaneus*, *B. proteus* and *Esch. coli*. But more often the infection is mixed. Aural toileting is the most important treatment. After thorough toileting a gauze wick soaked in antibiotic-steroid preparation is inserted in the ear canal and patient is advised to keep it moist by instilling the same drops twice or thrice daily then it can be substituted by ear drops. Broad-spectrum systemic antibiotics are used when there is cellulitis and acute lymphadenitis. Analgesics are used for relief of pain.

Otomycosis is a fungal infection of the ear canal caused by *Aspergillus niger*, or *Candida albicans*. It is seen in hot and humid climate of tropical and subtropical countries. The cardinal features of otomycosis include intense itching, pain, watery discharge with a musty odour, and ear blockage. **Nystatin** is effective against *Candida*. Other broad spectrum antifungals include **clotrimazole** and **betadine**. **2 salicylic acid** in alcohol is keratolytic. Antifungal treatment should be continued for a week even after apparent cure to avoid recurrence. Ear must be kept dry.

Otitis externa haemorrhagica is a viral infection characterized by formation of haemorrhagic blebs on the tympanic membrane and deep meatus causing severe pain in the ear and blood stained discharge when the blebs rupture. Treatment is directed to relief of pain with analgesics and antibiotics for infection. Another viral infection, **Herpeszoster oticus** is characterized by formation of vesicles on the tympanic membrane, meatal skin, concha and post-auricular groove. Treatment consists of intravenous **acyclovir** as soon as possible.

Eczematous otitis externa is the result of hypersensitivity to infective organisms or

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topical ear drops such as **chloromycetin** or **neomycin**. Intense irritation, vesicle formation, oozing and crusting in the canal characterize it. Treatment is withdrawal of topical antibiotic causing sensitivity and application of steroid cream.

Seborrhoeic otitis externa is associated with seborrhoeic dermatitis of the scalp. Itching is the main complaint. Greasy yellow scales are seen in the external canal. Treatment consists of Aural toileting, application of cream containing salicylic acid and sulphur; and attention is to be given to the scalp.

Neurodermatitis is caused by compulsive scratching due to psychological factors. Main complaint is intense itching and may follow infection of raw area left by scratching. Antibiotics can be given. Ear pack and bandage to the ear are helpful to prevent compulsive scratching.

Malignant or necrotising otitis externa is an inflammatory condition caused by *Pseudomonas* infection usually in the elderly, diabetics or in those on immunosuppressive drugs. Early manifestations are excruciating pain and appearance of granulations in the meatus. Treatment consists of high doses of intravenous antibiotics such as **tobramycin**, **ticarcillin** or third generation cephalosporins such as **moxalactum**. Antibiotics are given for 6-8 weeks or longer. Diabetes should be controlled.

11.1.1 DRUGS USED IN OTITIS EXTERNA

CORTICOSTEROID PREPARATIONS

BETAMETHASONE SODIUM PHOSPHATE^[ED]

(see section 5.3)

Indications : eczematous otitis externa.

Cautions : prolonged use must be avoided

Contraindications : should not be used in untreated infection

Side-effects : local sensitivity reactions

Preparations : drops for ear/eye/nose

Applications : apply 2-3 drops every 2-3 hours

Proprietary Preparations

Eyebet (*Incepta*), Eye/Ear/Nose drops, 0.1 %, Tk. 30/5 ml

Methasol (*Gaco*), Eye/Ear/Nose drops, 0.1 %, Tk. 31.80/5 ml

Betamethasone Sodium Phosphate with Neomycin sulphate

Indications: Otitis externa and other infective and inflammatory ear conditions.

Contraindications: Perforated ear drum,

Application: apply 2 to 3 drops 2 or 3 hourly.

Betamethasone Sodium Phosphate 0.1% + Neomycin sulphate 0.5%

Proprietary Preparations

Aristobet-N (*Aristo*), Eye/Ear/Nasal drops, Tk. 32.30/5 ml

Betacin-N (*Ibn Sina*), Eye/ Ear /Nasal drops, Tk. 35.00/15 gm

Betason-N (*Reman*), Eye/Ear/Nasal drops Tk. Tk 32.44/5ml

Betricin-N (*Nipa*), Eye/ Ear /Nasal drops Tk. 35.00/5ml

Bn (*Asiatic*), Eye/Ear/Nasal drops, Tk.32/5ml

Methasol-N (*Gaco*), Eye/ Ear /Nasal drops Tk. 35.00/5ml

Optison-N (*Opso Saline*), Eye/Ear/Nasal drops, Tk. 22.86/5 ml

DEXAMETHASONE^[ED]

(see also section 5.3)

Indications : eczematous otitis externa

Cautions : prolonged use must be avoided

Contraindications : should not be used in untreated infection

Side-effects : local sensitivity reactions may occur

Preparations : ear drop / ointment

Application : apply 3-4 times daily

Proprietary Preparations

Dexamethasone 0.1%

Acicot (*ACI*), Eye/Ear drops, Tk. 60/5 ml

Celudex (*Drug Int.*), Eye/Ear drops, Tk.60/5ml

Dexacort (*Opso Saline*), Eye/Ear drops, Tk. 52.63/5 ml

Dexadron (*Reman*), Eye/Ear drops, Tk. 60.23/4ml

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Dexamín (*Jayson*), Eye/Ear drops, Tk.50.20/5ml

Dexon (*Ibn Sina*), Eye/Ear drops, Tk. 70/5 ml

Dexonex (*Square*), Eye/Ear drops, Tk.60/5 ml

Gludex (*Kemiko*), Eye/Ear drops, Tk. 70/5 ml

Inflavis (*Beximco*), Eye/Ear drops, Tk.60/5ml

Orbidex (*Popular*), Eye/Eardrops, Tk.70/5ml

HYDROCORTISONE ^[ED]

(see also Section 5.3)

Indications : eczematous otitis externa

Cautions : prolonged use must be avoided

Contraindications : untreated infection

Side-effects : local sensitivity reactions

Preparations : ear drops

Application : apply 2-4 drops into the ear 3-4 times daily

Proprietary Preparations

Hydrocortisone 1% + Neomycine Sulphate+ 0.5% + Polymyxine B Sulphate 10.000 units:

NPH (*Reman*), Eye/ Ear drpos, Tk 60.23/ 5ml

Otosporin (*GSK*), Eye/Ear Drpos, Tk. 60/5 ml

Polymix-H (*Opso Saline*), Eye/ Ear drpos, Tk.40/5 ml

Hydrocortisone 1%+ Gentamicin 0.3%.

Gentabac HC (*Popular*), Ear drops, Tk. 51.04/10 ml

Gisin-H (*Nipa*), Ear drops, Tk. 50/10 ml

Recin HC (*Reman,*) Ear drops, Tk.50/10 ml

TRIAMCINOLONE ACETONIDE

(see notes above and section 11.2)

ANTIMICROBIAL PREPARATIONS

CHLORAMPHENICOL ^[ED]

(see also section 1.1. 12)

Indications : bacterial otitis externa

Cautions : avoid prolonged use

Side-effects : high incidence of sensitivity reactions

Preparations : ear drops containing Chloramphenicol 5%

Administration : apply 2-3 drops into the ear 2-3 times daily

Proprietary Preparations

Ophthalcol (*Drug Int*), Eye / Ear drop , 0.5%, Tk. 30.00/10 ml

Ramphen (*Kemiko*), Eye/Ear drops, 0.5%, Tk. 34.27/10 ml

SQ-Mycetin (*Square*), Eye/Ear drops, 0.5%, Tk.34.40/10 ml

Supraphen (*Gaco*), Ear Drops, 1%, Tk. 19.00/10; 0.5%, Tk. 16.05/10 ml;

Chloramphenicol 5%+ Lignocaine 1%

Chlorphen (*Nipa*), Ear drops, Tk.20.23/10ml

Otophenicol (*Reman*), Ear drops,

Tk.25.00/10ml

Supraphen plus (*Gaco*), Ear drops, Tk. 20.00/10ml

CIPROFLOXACIN ^[ED]

(see also section 1.1.5)

Indications: Otitis externa, acute otitis media, chronic suppurative otitis media, and prophylaxis during otic surgeries such as mastoid surgery.

Contraindications: Known hypersensitivity to ciprofloxacin.

Cautions: prolonged use may result in overgrowth of non-susceptible organisms including fungi. The drug should be discontinued if the sign of hypersensitivity reaction.

Side-effects : see section 1.1.5

Application: Initially apply 2 to 3 drops every 2 to 3 hours; reducing the frequency of instillation gradually as infection is controlled.

Proprietary Preparations

Ciflox (*Reman*), Eye/Ear Drops 0.3%, Tk. 35.00/5 gm

Cip (*Asiatic*), Eye / Ear drops, 0.3%, Tk.

Ciprocin (*Square*), Eye/Ear drops, 0.3%, Tk. 40.15/5 ml

Ciprox (*Opsonin*), Eye/Ear drops 0.3%, Tk. 30.19/5 ml

Ciproxy (*Opso Saline*), Eye & Ear drops, 0.3%, Tk. 26.41/10 ml;

Neofloxin (*Beximco*), Eye/Ear drops, 0.3%, Tk.40.00/5 ml

Procin (*Kemiko*), Eye / Ear drops 0.3%, Tk. 50.00/10 ml

Spectra (*Jayson*), Eye / Ear drops, 0.2% Tk. 40.00/5 ml

CLOTRIMAZOLE ^[ED]

(see also section 12.2.2)

Indications : fungal infection in External Auditory Canal

Side-effects : occasional local irritation.

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Preparations: clotrimazole 1% in polyethylene glycol

Applications : apply 2-3 times daily continuing for at least 14 days after disappearance of infections

Proprietary Preparations
(see section 12.2)

GENTAMICIN^[ED]

(see also section 1.1.3)

Indications : bacterial otitis externa

Cautions : avoid prolonged use

Side-effects : local sensitivity

Preparation : ear drop

Application : apply 2-4 drops 3-4 times daily

Proprietary Preparations

Gento (*Gaco*), Eye/Ear drops, 0.3%, Tk. 31.49/10 ml

Recin (*Reman*), Eye/Ear drops, 0.3%, Tk. 35.00/10 ml

G-Gentamicin (*Gonoshasthaya*), Eye/Ear drops, 0.30%, Tk. 25.00/10 ml

Genacyn (*Square*), Eye/Ear drops, 0.30%, Tk. 32.02/10 ml

Gentamicin Sulphate 0.3% + Hydrocortisone Acetate 1%.

(see under *Hydrocortisone*)

LOMEFLOXACIN

(see also section 1.1.5)

Indications: Otitis externa, acute otitis media, chronic suppurative otitis media, and prophylaxis during otic surgeries such as mastoid surgery.

Contraindications: Known hypersensitivity to lomefloxacin

Side effects: photosensitivity

Application: Initially apply 2 to 3 drops every 2 to 3 hours; reducing the frequency of instillation gradually as infection is controlled.

Proprietary Preparations

Lomecin (*Reman*) Ear/Eye drop, 0.3%, Tk 60/5 ml

Lumex (*Gaco*) Ear/Eye drop, 0.3%, Tk 60/5 ml

OFLOXACIN

(see also section 1.1.5)

Indications: It is indicated for the treatment of external ear infections (otitis externa and certain middle ear infections (otitis media)

Contraindications: Known hypersensitivity to ofloxacin or any other component of this preparation,

Side effects: mild irritation or mild discomfort in the ear may occur. Symptoms of an allergic reaction include rash, itching, swelling or trouble breathing

Caution: prolonged use of ear drops may result in overgrowth of non-susceptible organisms and secondary infection respectively.

Proprietary Preparations

Obactin (*Ibn Sina*), Eye/Ear drops, 0.3%, Tk. 85.00/5 ml

Vista (*Aristo*), Eye / Ear drops, 0.3%, Tk. 85/5ml

11.1.2 DRUGS USED IN OTITIS MEDIA

Otitis media is an inflammation of middle ear cleft. It is more common in infants and children especially of lower socio-economic group. Infection enters via eustachian tube. Most common organisms are *Strept. pneumoniae*, *H. influenzae*, *Strept. pyogens*, *Staph. aureus* and *Esch. coli*. Otitis media with effusion is a condition characterized by accumulation of non-purulent effusion in the middle ear. The effusion is thick and viscid but some times it may be thin and serous. The fluid is nearly always sterile. It is commonly seen in school going children. Antibacterial therapy is indicated in all cases of acute and chronic suppurative otitis media. The drugs which are effective in acute otitis media are **penicillin**, **amoxicillin**, **cefactor**, **cotrimoxazole**, **erythromycin**, **cefuroxime axetil** or **cefixime**. Antibacterial therapy must be continued for minimum 10 days till tympanic membrane regains its normal appearance and hearing returns to normal. Nasal decongestant e.g. **ephedrine**, **oxymetazoline**, **xylometazoline** should be used to

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relieve eustachian tube oedema and promote ventilation of middle ear. Analgesics and antipyretics such as **paracetamol** or **aspirin** help to relieve pain and temperature. If there is discharge in the ear, it is dry-mopped with sterile cotton buds and a wick moistened with antibiotic may be inserted. Dry local heat may help to relieve pain. Treatment of otitis media with effusion can be given by topical decongestant in the form of nasal drops, sprays or systemic decongestants. Antimicrobial prophylaxis can be given for those having recurrent otitis media associated with upper respiratory tract infection. In such cases, low dose long term antibiotic or sulphonamide can be instituted.

Chronic suppurative otitis media (CSOM) is a long standing infection of a part or whole of the middle ear cleft. Incidence of CSOM is higher in developing countries because of poor socio-economic condition, poor nutrition and lack of health education. It is the single most important cause of hearing impairment in rural population. CSOM show multiple organisms like *Ps. aeruginosa*, *B. proteus*, *E. coli*, *Staph. aureus* and some anaerobes include *Bacteroids*, *B. fragilis* and *Streptococci*. It is characterized by ear discharge, which is offensive or non offensive, mucoid, mucopurulent, purulent or blood stained and persistent or intermittent according to the type of safe or unsafe variety of CSOM. Aural toileting can be done by dry mopping with absorbent cotton buds, suction clearance under microscope. Antibiotic ear drops containing **neomycin**, **polymixin**, **chloramphenicol** or **gentamicin** are used. They are combined with steroids which have local anti-inflammatory effect (see also section 11.1.1). To use ear drops, patients to be lied down with the diseased ear up, antibiotic drops are instilled and then intermittent pressure to be applied on the tragus for antibiotic solution to reach the middle ear. This should be done 3-4 times a day. The patient should be instructed to avoid water entry into the ear during bathing,

swimming and hair washing. Many attacks are viral in origin and need only simple analgesic such as **paracetamol** (See also section 7.5.2.1) for relief of pain. Severe bacterial infection should be treated with systemic antibiotics (See also section 1.1). Surgical treatment is the only option for unsafe variety of CSOM.

11.1.3 REMOVAL OF WAX

Treatment of wax consists of its removal by syringing or instrumental manipulation. Hard impacted wax may sometimes require prior softening with wax solvents. Syringing should be avoided in patients with a history of recurrent otitis externa, a perforated ear drum, or previous ear surgery. Wax may be removed by syringing with normal saline at body temperature. Suction clearance under microscope is a better option. Some times, the wax is too hard and impacted to be removed by syringing or instrumentations. It should be softened by drops of **5% sodium bicarbonate in equal parts of glycerine and water** instilled two or three times a day for several days. **Hydrogen peroxide, liquid paraffin or olive oil** may also achieve the same result. Commercial preparations containing ceruminolytic agents like paradichlorobenzene 2% can also be used and syringing can be tried again.

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11.1.4 DRUG USED IN MEINERE'S DISEASE

BETAHISTINE

Indications: it is commonly prescribed to patients with balance disorders or to alleviate vertigo symptoms associated with Meniere's disease.

Side effects: headache, insomnia, nausea

Contraindications: for people with pheochromocytoma, bronchial asthma and peptic ulcer

Doses : ADULTS : 1 to 2 tablets three times per day after meals.

Proprietary Preparations

Menaril (*Incepta*), Tab., 8 mg, Tk. 2.00/Tab.

Merison (*Square*), Tab., 6 mg, Tk. 2.01/Tab.

Tiniril (*Opsonin*), Tab., 8 mg, Tk. 1.51/Tab.

Veserc (*Unimed*), Tab., 16 mg, Tk. 5.00/Tab.; 8mg, Tk. 3.00/Tab.

11.2 DRUGS ACTING ON THE NOSE

11.2.1 DRUGS USED IN NASAL ALLERGY

It is an IgE-mediated immunologic response to nasal mucosa to air borne allergens and is characterized by watery nasal discharge, sneezing, nasal obstruction and itching in the nose. Allergens e.g. house mite, pillow or mattress with plastic sheet, particular foods to which the patient is found allergic, should be avoided. Drugs used in nasal allergy are antihistamines, they control rhinorrhoea, sneezing and pruritus. Dose and type of antihistamines have to be individualized. If one is not effective, another may be tried from a different class. Sympathomimetic drugs such as **phenylephrine**, **oxymetazoline** and **xylometazoline** are often used to relieve nasal obstruction. Oral corticosteroids are very effective in controlling the symptoms of allergic rhinitis. Topical steroids such as **beclomethasone dipropionate**, **budesonide** and **flunisolide acetate**, **fluticasone**, **mometasone**, **dexamethasone**

isonicotine used as aerosols are very effective in controlling the symptoms. **Sodium cromoglycate** stabilises the mast cells. It is used as 2% solution for nasal drops or spray or as an aerosol powder. In addition to these following Anti histamine preparations are used in nasal allergy:

Chlorpheniramine, **diphenhydramine**,
hydroxyzine, **pheniramin**,
promethazine, **Triprolidine**.
pseudoepedrine HCl, **desloratadine**,
fexofenadine, **levocetirizine**,
loratadine, **acrivastine** and **cetirizina**
(see section 4.8.1)

ANTI HISTAMINES USED FOR NASAL ALLERGY

(see section 4.8.1)

CORTICOSTEROID PREPARATIONS USED FOR NASAL ALLERGY

(see also section 4.2)

BECLOMETHASONE DIPROPIONATE

Indications : prophylaxis and treatment of allergic and vasomotor rhinitis

Cautions : should be avoided in untreated nasal infection and after nasal surgery till complete healing. It should also be avoided in pulmonary tuberculosis

Side-effects : dryness, irritation of nose and throat and epistaxis, raised intra-ocular pressure. Smell and taste disturbances may occur

Dose : 50-100 micrograms (1-2 sprays) into each nostril twice daily in ADULT and CHILD over 6 years

Proprietary Preparations

Beclomet (*Acme*), Nasal Spray, 100 mcg/ Actuation, Tk. 120/200 MD

Beconase (*G.S.K*), Nasal Spray, 50 mcg/ Spray, Tk. 207.21/100 ml

Becospray (*Square*), Nasal Spray, 50 mcg / spray, Tk. 125.47/200 Puffs

Decomit (*Beximco*), Nasal Spray, 50 mcg/ Spray, Tk. 146.00/200 MD

BUDESONIDE

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Indications : prophylaxis and treatment of allergic and vasomotor rhinitis; nasal polyps

Cautions : see under *Beclomethasone Dipropionate*

Side-effects: see under *Beclomethasone Dipropionate*

Dose : ADUL and CHILD over 12 years 200 micrograms (2 spray) into each nostril daily in the morning or 100 microgram (1 spray) into each nostril twice daily.

Proprietary Preparations

Budenide (*ACI*), Nasal Spray, 100 mcg/spray, Tk. 250.00/120 Spray

Budicort (*Incepta*), Nasal Spray, 100 mcg/spray, Tk. 250.00/120 MD

Pulmicort (*Opsonin*), Nasal Spray, 1 mg/1 ml, Tk. 187.97/120 MD

FLUTICASONE PROPIONATE

Indications : prophylaxis and treatment of allergic rhinitis

Cautions : see under *Beclomethasone Dipropionate*

Side-effects : see under *Beclomethasone Dipropionate*

Dose: ADULT and CHILD over 12 years, 100 micrograms in to each nostril once daily, increased to twice daily if required; maximum total 400 microgram daily. CHILD upto 4-11 years, 50 microgram into each nostril once daily, increased to twice daily if required; maximum total 200 microgram daily

Proprietary Preparations

Flixonase (*GSK*), Nasal Spray, 50mcg/metered dose, Tk. 275/120 MD

Flonaspray (*Square*), Nasal Spray, 50 mcg / spray, Tk. 250.94/120 Spray

Fluticon (*Acme*), Nasal Spray, 50mcg/metered dose Tk. 250.00/120 MD

Fluvate (*Opsonin*), Nasal Spray, 0.005%, Tk. 187.97/120 MD

Fluvent (*ACI*), Nasal Spray, 50mcg/spray , Tk. 250.00/120 Spray

Lutisone (*Incepta*),Nasal Spray, 0.05%, Tk. 250.00/120 MD

Perinase (*Beximco*), Nasal Spray, 50 mcg/Actuation, Tk. 250.00/120 MD

Fluticasone furoate

Avamys (*GSK*), Nasal Spray,27.5mcg/spray Tk. 354.38/120 MD

MOMETASONE FUROATE

Indications : prophylaxis and treatment of allergic rhinitis

Cautions : see under *Beclomethasone*

Side-effects : see under *Beclomethasone*

Dose : ADULT and CHILD over 12 years 100 micrograms in to each nostril once daily, increased to twice daily if required; maximum total 200 microgram daily. When control achieved reduce to 50 micrograms. CHILD upto 6-11 years, 50 microgram in to each nostril once daily.

Proprietary Preparations

Momeson (*Incepta*), Nasal Spray, 50 mcg/ Spary, Tk. 250.00/120 dose;

Metaspray (*Square*), Nasal Spray, 50 mcg/ Spary, Tk. 250.94/120 dose;

Nasomet (*Beximco*), Nasal Spray, 50 mcg/ Spray, Tk. 250.00/120 MD

Nasonex (*Opsonin*), Nasal Spray, 50 mcg/ Spary, Tk. Tk.219.92/120 MD

TRIAMCINOLONE ACETONIDE

Indications : prophylaxis and treatment of allergic rhinitis

Cautions : see notes above

Side-effects : see notes above

Dose : for ADULT apply 110 micrograms (2 spray) in to each nostril once daily; CHILD upto 6-12 years half of the adult dose.

Proprietary Preparations

Cenolon (*Incepta*), Nasal Spray, 550 mcg/ml, Tk. 200.00/120 Spray

Cortefin (*ACI*),Nasal Spray, 55 mcg/ml, Tk. 200.00/120 spray

T-cort (*Opsonin*), Nasal Spray, 550 mcg/ml, Tk. 150.38/120 spray

Trispray (*Square*), Nasal Spray, 550 mcg/ml, Tk. 200.75/120 metered dose

MAST CELL STABILIZERS FOR NASAL ALLERGY

OLOPATADINE

Indications :seasonal allergic rhinitis

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Side-effects : epistaxis, nasal ulceration, and nasal septal perforation
Dose : ADULT:two sprays per nostril twice daily. CHILD over 6 years of age one spray per nostril twice daily.

Proprietary Preparations

Alercon (*Acme*), Nasal Spray , 0.6%, Tk. 400.00/120 doses;
Lopadine (*Incepta*), Nasal Spray, 0.6%, Tk. 400.00/120 doses
Olopan (*Beximco*), Nasal Spray, 0.6%, Tk. 400.00/120 doses.

SODIUM CROMOGLYCATE

Indications: prophylaxis for allergic rhinitis

Side-effects: local irritation

Dose : 4% aqueous nasal spray ADULT and CHILD, apply 1 puff into each nostril 2-4 times daily

Proprietary Preparations

Aristocrom (*Aristo*) Eye/Nasal drops, 2%,Tk. 65.00/10ml
G-Cromo (*Gonoshasthaya*), Eye /Nasal drops, 2%, Tk. 50.00/10 ml
Icrom (*ACI*), Eye drops, 2%, Tk. 65.25/10 ml
Nacromin(*Square*), Nasal drops, 2%, Tk. 66.25/15 ml
Nasochrom (*Drug Int.*), Eye /Nasal drops, 2%, Tk. 60.00/10 ml
Opsocrom (*Opso Saline*), Eye / Nasal Drops, 2%, Tk. 48.87/10 ml

11.2.2 TOPICAL NASAL DECONGESTANTS

Atmospheric temperature and humidity may cause nasal congestion because nasal mucosa is sensitive to it. The nasal sinuses produce huge amount of mucus in a day and most of it passes into the stomach through the nasopharynx. **0.9% Sodium chloride solution** given as nasal drops may relieve nasal congestion by liquefying mucus secretions. Decongestant nasal drops contain sympathomimetic drugs relieve symptoms of nasal congestion associated with vasomotor rhinitis and common cold. Use of these drugs must be for short term, usually not longer than 7 days. These drugs exert their effect by

vasoconstriction of the mucosal blood vessels, which in turn reduces oedema of the nasal mucosa. These drugs are of limited value because they can give rise to rebound congestion on withdrawal, which is due to a secondary vasodilatation with a subsequent temporary increase in nasal congestion. This in turn makes habits for further use of the decongestant and that leads to a vicious cycle of events. **An ephedrine nasal drop**, the sympathomimetic preparation can be used as nasal decongestant. It can give relief of nasal congestion for several hours. **Oxymetazoline** and **xylometazoline** are more potent sympathomimetic nasal decongestant but are more likely to cause a rebound effect. All of these preparations should not be used concomitantly with monoamino-oxidase inhibitor because it may cause hypertensive crisis. **Ipratropium bromide** responds well to the treatment of non-allergic watery rhinorrhoea. Inhalation of warm moist air, compounds containing volatile substances such as **menthol** and **eucalyptus** are also useful.

EPHEDRINE HYDROCHLORIDE

Indications : nasal congestion

Caution : excessive or prolonged use must be avoided. It should not be used for infants under 3 months. If irritation occurs it may cause narrowing of nasal passage

Side-effects : local irritation, tolerance may develop after excessive use; Rebound congestion is another important side-effect

Administration : instill 4-5 drops in to each nostril up to 3-4 times daily

Proprietary Preparation
Remadrin (*Reman*), Nasal drops, 0.5%,Tk. 45.52/10ml

IPRATROPIUM BROMIDE

Indications : rhinorrhoea associated with allergic and non allergic rhinitis

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Cautions : glaucoma, prostatic hypertrophy, pregnancy

Contraindication: avoid spraying near eyes

Side-effects: nasal dryness and epistaxis

Administration : apply 2 puffs into each nostril 2-3 times daily, CHILD under 12 years not recommended

Proprietary Preparation

Rinase (ACI), Nasal Spray, 21mcg/spray, Tk.150.00/120 Spray;

OXYMETAZOLINE HYDROCHLORIDE

Indications: nasal congestion

Cautions: see under *ephedrine hydrochloride*

Side-effects: see under *ephedrine hydrochloride*

Administration: see under *xylometazoline hydrochloride*

Proprietary Preparations

Afrin (Aristo), Nasal drops, 0.05%, Tk.45/10 ml; 0.025%, Tk. 40.00/10 ml

Azolin (Acme), Nasal drops, 0.05%, Tk. 45.00/10 ml; 0.025%, Tk. 40.00/10 ml

Confree (Asiatic), Nasal drops, 0.05%, Tk. 45.00/10 ml; 0.025%, Tk. 40.00/10 ml

G-Con (Kemiko), Nasal drops, 0.05%, Tk. 45.00/10 ml; 0.025%, Tk. 40.00/10 ml

Nasalox(General), Nasal drops, 0.025%, Tk. 40.00/10 ml; 0.05%, Tk. 45.00/10 ml

Natazol (Ibn Sina), Nasal drops, 0.025%, Tk. 10.00/10 ml; 0.05%, Tk. 45.00/10 ml

Nazolin (Beximco), Nasal Spray, 0.025%, Tk. 130.00/200 doses

Nocon (Square), Nasal drops, 0.05%, Tk. 45.00/10 ml

Oxymet(Opso Saline), Nasal drops, 0.025%, Tk. 30.08/10 ml.; 0.05%, Tk. 33.83/10 ml

Oxynex (Opsonin), Nasal drops, 0.025%, Tk. 30.08/10 ml; 0.05%, Tk. 33.83/10 ml.; Nasal Spray, 0.05%, Tk. 60.15/200 MD

Rynex (Incepta), Nasal drops, 0.05%, Tk. 45.00/10 ml; 0.025%, Tk. 40.00/10 ml; Nasal Spray 0.05%, Tk. 80.00/200doses

XYLOMETAZOLINE HYDROCHLORIDE

Indications : nasal congestion.

Cautions: see under *ephedrine hydrochloride*

Contraindication: CHILD under 3 months

Side-effects: see under *ephedrine hydrochloride*

Administration: ADULT: Instill 4-5 drops of 0.1% in to each nostril 2-3 times daily when required. Maximum duration 7days

CHILD: Over 3 months instill 2-3 drops of 0.05% in to each nostril 2-3 times daily when required. Maximum duration 7 days.

Proprietary Preparations

Antazol (Square), Nasal drops, 0.05%, Tk. 11.01/15 ml

Antazol (Square), Nasal drops, 0.10%, Tk. 11.51/15 ml

G-Xylometazoline (Gonoshasthaya), Nasal drops, 0.1%, Tk. 11.25/15 ml

Rhinozol (Acme), Nasal drops, 0.05%, Tk. 11.01/15 ml

Rhinozol (Acme), Nasal drops, 0.1%, Tk. 11.51/15 ml

Xylomet (Opsonin), Nasal drops, 0.1%, Tk. 8.99/15 ml

Xylovin (Opso Saline), Nasal drops, 0.1%, Tk. 5.47/10 ml; 0.05%, Tk. 5.47/10 ml

Sodium Cromoglycate 2.6mg + Xylometazoline HCl 0.0325mg

Nacromin (Square), Nasal Spray, Tk. 110.41/120 metered dose

Xylo Plus (Incepta), Nasal Spray, Tk. 110.00/120 metered dose

11.2.3 NASAL PREPARATIONS FOR THE INFECTION AND EPISTAXIS

Infection of the nasal skin (**cellulitis**) is usually invaded by *Streptococci* or *Staphylococci* leads to a red, swollen and tender nose. Infection can be treated with antibiotics, hot compression and analgesics. An acute infection of the hair follicle by the *Staphylococcus aureus* is called furuncle or boil. The lesion is small but extremely painful and tender. The furuncle may rupture spontaneously in the nasal vestibule. Treatment consists of warm compression, an analgesic to relieve pain, and topical and systemic antibiotics directed against staphylococcus.

Vestibulitis is diffuse dermatitis of nasal vestibule. Causative organism is *Staph.*

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aureus. Treatment consists of cleaning the nasal vestibule of all crusts and scales with cotton applicator soaked in **Hydrogen peroxide** and application of antibiotic steroid ointment. Treatment should always be continued for a few more days even after the apparent cure, as the condition is likely to relapse.

Septal abscess mostly results from secondary infection of septal haematoma. Systemic antibiotic should be started and continued at least for 10 days.

Acute rhinitis can be viral, bacterial or irritant type. Viral rhinitis is known as common cold (coryza). The infection is usually acquired through air borne droplets. Several viruses such as adenovirus, rhinovirus, coxsackie virus are responsible. There is burning sensation at the back of the nose soon followed by nasal stuffiness, rhinorrhoea and sneezing. Patient feels chilly and there is low-grade fever. Initially nasal discharge is watery and profuse but may become mucopurulent due to secondary bacterial invasion. Secondary invaders include *Strep. haemolyticus*, *Pneumococcus*, *Staphylococcus*, *H. influenzae*, *Kleb. pneumoniae* and *M. catarrhalis*. Treatment consists of bed rest, which is essential to cut down the course of illness. Plenty of fluids are encouraged. Symptoms can be easily controlled with antihistamines and nasal decongestants. Analgesics are useful to relieve headache, fever and myalgia. Antibiotics are only required when secondary infection supervenes.

Bacterial rhinitis may be primary which is seen in children and is usually the result of infection with *Pneumococcus*, *Streptococcus* or *Staphylococcus*. A grayish white tenacious membrane may form in the nose. Secondary bacterial rhinitis is the result of bacterial infection supervening acute viral rhinitis.

Irritant rhinitis is the form of acute rhinitis, caused by exposure to dust, smoke or irritating gases such as ammonia, formalin, acid fumes etc. Treatment includes particular attention to sinuses, tonsils, adenoids, allergy, and

smoky or dusty surroundings. Nasal irrigation with alkaline solution help to keep the nose free from viscid secretions and also remove superficial infection. Nasal decongestants help to relieve nasal obstruction and improve sinus ventilation. Antibiotics help to clear nasal infection and concomitant sinusitis.

Nasal polyps are non-neoplastic masses of oedematous nasal or sinus mucosa. Nasal stuffiness leading to total nasal obstruction, partial or total loss of smell, headache due to associated sinusitis, sneezing and watery nasal discharge due to associated allergy, Polyp protruding from the nostril may be the presenting symptom. Conservative treatment may include antihistamines and control of allergy. A short course of steroid nasal drop or spray is often helpful to produce significant shrinkage in the early stages of polyp. The reduction of the oedema can be maintained by the continuing treatment with the same spray. If the condition does not respond to medical therapy, endoscopic clearance of the polyp should be carried out immediately.

Acute inflammation of the sinus mucosa is called acute sinusitis. Most common cause of acute sinusitis is viral rhinitis followed by bacterial invasion. Sinus mucosa is the continuation of nasal mucosa and infections from nose can travel directly. Infected water can enter the sinuses through their ostia during swimming and diving. Trauma may permit direct infection of sinus mucosa. Infection from the molar or premolar teeth or their extraction may be followed by acute sinusitis. Sinusitis is common in cold and wet climate. Atmospheric pollution, smoke, dust and overcrowding also predispose to sinus infection. The bacteria most frequently responsible for acute suppurative sinusitis are *Strep. pneumoniae*, *H. Influenzae*, *Moxacella catarrhalis*, *Strep. pyogenes*, *Staph. aureus* and *Kleb. pneumoniae*. Anaerobic organisms and mixed infections are seen in sinusitis of dental origin. Constitutional symptoms and signs consist of fever, headache, pain,

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tenderness, redness and oedema of chick and nasal discharge. Conservative treatment includes antimicrobial drugs such as **ampicillin, amoxicillin, erythromycin, doxycycline** or **cotrimoxazole, sparfloxacin** etc. Nasal decongestant drops such as **1% ephedrine** or **0.1% xylo- or oxymetazoline** are used as nasal drops or sprays. Steam inhalation with steam alone or medicated with **menthol** or **tincture benzoin** provides symptomatic relief and encourages sinus drainage. **Paracetamol** can be given for the relief of pain and headache. Local heat to the affected sinus is often soothing and helps in the resolution of inflammation. Most cases of acute maxillary sinusitis respond to medical treatment. Surgical treatment is done only when medical treatment fails.

Bleeding from inside the nose is called epistaxis. It is fairly common and is seen in all age groups and often presents as an emergency. It is the sign and not a disease so attempt should be made to find out any local or constitutional cause. Causes are trauma, infections, foreign bodies, neoplasm of nose, atmospheric changes such as high altitude, hypertension, arteriosclerosis, mitral stenosis, aplastic anemia, leukemia, purpura, hemophilia, scurvy, vitamin K deficiency etc. Most of the times, bleeding occurs from the Little's area and can be easily controlled by pinching the nose with thumb and index finger for about 10 minutes. This compresses the vessels of the Little's area. If the bleeding is profuse or site of bleeding is difficult to localize then packing should be done. For this, use ribbon gauze soaked with liquid paraffin. One or both cavities may need to be packed. Pack can be removed after 24 hours if bleeding has stopped. Some times it has to be kept for 2-3 days. Systemic antibiotics should be given to prevent sinus infection (see section 1.1).

Bismuth idoform paraffin paste (BIPP) pack is used for packing cavities after surgery and epistaxis as mild disinfectant and astringent.

AMOXYCILLIN

(see section 1.1.1.3)

AMPICILLIN

(see section 1.1.1.3)

PHENOXYMETHYL PENICILLIN

(see section 1.1.1.2)

PREPARATIONS FOR NON-INFECTED INFLAMMATORY NASAL CONDITIONS

BETAMETHASONE SODIUM PHOSPHATE

Indications : non-infected inflammatory conditions of the nose

Cautions : should be avoided in the presence of untreated nasal infection and also after nasal surgery. Should also be avoided in pulmonary tuberculosis

Side-effects : dryness and irritation of the nose

Preparation : drops (for nose, eye, ear) Betamethasone sodium phosphate 1%

Application : 2-3 drops into each nostril 2-3 times daily

Proprietary Preparations

(see section 11.1.1)

PREPARATION FOR NASAL INFECTION & EPISTAXIS

BETAMETHASONE SODIUM PHOSPHATE & NEOMYCIN SULPHATE

Indications: nasal infection and epistaxis

Application: apply 2-3 drops in to nostril 2-3 times daily

Proprietary Preparations

see section 11.1.1

11.3 DRUGS ACTING ON THE OROPHARYNX

**11.3.1 DRUGS FOR ORAL
ULCERATION AND
INFLAMMATION**

The causes of ulcers of the oral cavity are trauma, (physical, chemical or thermal). Infection, (viral, bacterial, fungal), immune disorders, (aphthous ulcer), neoplasm, skin disorders, blood disorders, nutritional deficiencies, gastrointestinal diseases and drug therapy. First of all diagnosis must be made because majority of these conditions require specific treatment along with the local treatment. Mouth ulcer for more than 3 weeks duration need urgent diagnosis and treatment to exclude carcinoma. Aim of local treatment is to give protection to the ulcerated area, relieving pain and reducing inflammation. A saline or compound **thymol glycerin** mouthwash may relieve pain. Antiseptic mouthwashes such as **chlorhexidine** or **povidone iodine** mouth wash is beneficial for healing of recurrent aphthous ulcer. Topical **corticosteroid** therapy may be useful for some form of oral ulceration. It is most effective in the treatment of aphthous ulcer, thrush or other types of candidiasis. **Amelexanox** paste is also used in the treatment of aphthous ulcer.

Systemic **corticosteroid** must be reserved for severe conditions such as pemphigus vulgaris. To relieve pain **lidocaine (lignocaine) 5% ointment or lozenges** are applied to the ulcer, but care must be taken not to use this before meals as this might lead to choking. **Carbenoxolone** gel or mouthwash may be of some value. **Carmellose gelatin** paste may relieve some discomfort arising from ulceration by protecting the ulcer site. For mild oral and perioral lesion **salicylates** may be used.

Benzydamine mouth wash or spray may be useful in palliating the discomfort associated with a variety of ulcerative condition. It has also been found to be effective in reducing the discomfort of post irradiation mucositis.

**11.3.2 OROPHARYNGEAL ANTI
INFECTIVE DRUGS**

Viral infection is most common. These are herpes simplex. Herpangina is a coxsackie viral infection mostly affecting children. They usually persist for about a week. Herpetic gingival stomatitis is also known as orolabial herpes, is caused by herpes simplex virus. It may be primary and secondary. Primary infection affects children and secondary or recurrent herpes mainly affects adults. Most commonly it involves the vermilion border of the lip which is known as herpes labialis. Treatment is mostly symptomatic. **Acyclovir**, 200 mg, five times a day for 5 days helps to cut down the course of recurrent herpes labialis. Acute ulcerative gingivitis is also called Vincent's infection caused by *Borrelia vincenti*. Treatment is systemic antibiotics (**penicillin** see section 1.1.1 or **erythromycin** see section 1.1.4 and **metronidazole** (see section 1.1.8). Frequent mouth washes (with sodium **bicarbonate** solution) and attention are to be given to dental hygiene.

Moniliasis (*Candidiasis*) is caused by *C. albicans*, and occur in the form of thrush and chronic hypertrophic candidiasis. The condition is seen in infants and children. Adults are also affected when they are suffering from malignancy and diabetes or taking broad-spectrum antibiotics, cytotoxic drugs, steroid or radiation. Thrush can be treated by topical application of **nystatin** or **clotrimazole**. Hypertrophic form usually requires excision surgery.

Acute pharyngitis is also very common. Streptococcal pharyngitis is treated with **penicillin**.

Diphtheria is to be treated with diphtheria antitoxin and **penicillin** or **erythromycin**.

Gonococcal pharyngitis responds to conventional doses of **penicillin** or **tetracycline**.

Fungal pharyngitis of the oropharynx can occur as an extension of oral thrush; **nystatin** is the drug of choice.

Aphthous ulcer is an autoimmune process that may be caused by

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nutritional deficiency (**Vitamin B₁₂**, **folic acid** and **iron**), viral infection, hormonal changes or stress. Treatment consists of topical application of **steroids** and cauterization with 10% **silver nitrate**. In severe cases 250 mg of **tetracycline** dissolved in 50 ml of water is given as mouth rinse and then to be swallowed, four times a day. Local pain can be relieved with **lignocaine** viscous.

Oral mucosal lesions (erythema multiforme) consist of vesicles or bullae which may involve lips, buccal mucosa and tongue. The disease is self-limiting and management is mainly supportive. Steroid preparations are used to treat the severe cases.

Proprietary Preparations

Erythromycin (see Section 1.1.5)

Nystatin (see Section 1.2.1)

Penicillin (see Section 1.1.1)

Tetracycline (see Section 1.1.6)

ACYCLOVIR^[ED]

(see section 1.4.)

Indications: Herpes simplex and varicella-zoster

Cautions: renal impairment, pregnancy, breast-feeding; adequate hydration must be maintained with infusion

Side-effects: rashes, gastrointestinal disturbances, increased bilirubin and liver enzymes, increases blood urea and creatinine

Dose: Tab. 200 mg 5 times daily for 5 days. Child under 2 years, half of adult dose. For streptococcal infections, required systemic penicillin

Proprietary Preparations

(see Section 1.4.)

PENICILLIN

(see section 1.4.)

Indications: Acute ulcerative gingivitis (Vincent's infection) responds to systemic metronidazole (see section 1.1.8)

DRUGS USED IN OROPHARYNGEAL ULCERS

(see also *Dental Practitioner's Formulary*)

FOR APHTHOUS ULCER

AMLEXANOX

Indications: aphthous ulcers in people with normal immune systems.

Proprietary Preparations

Apsol (Square), Oral Paste, 5%, Tk.75.28/5 gm

Amlex (ACI), Oral Paste, 5%, Tk. 75/5 gm

Sorex (Eskayef), Oral Paste, 5%, Tk.75/5 gm

(see also *Dental Practitioner's Formulary*)

FOR FUNGAL INFECTION

Amphotericin (see section 1.2),
Nystatin (see section 12.2.2&1.2.3)

MICONAZOLE GEL^[ED]

See section 12.2.2

Indications: Oropharyngeal candidiasis.
Dose 5-10 ml after food 4 times a day. Retain near oral lesions before swallowing. Continue treatment until 48 hours until lesions have healed.

Proprietary Preparations

Miconazole oral gel 2%

A-Migel (Acme), Oral Gel, Tk. 52/15 g

Candoral (Beximco), Oral Gel, Tk. 52/15g

Dakrin (General), Oral Gel, Tk. 60/15 g

Fungidal (Square), Buccal Tab. 10 mg, Tk. 5.01/Tab.

Gelora (Square), Oral Gel, Tk. 60/15 gm

Micoderm (Drug Int.), Oral Gel, Tk. 50/15 g

Micosina (Ibn Sina), Oral Gel, Tk. 60/15 g

Myco (Parmasia), Oral Gel, Tk. 50/15 gm

Mycon (Aristo), Oral Gel, Tk. 60/15 gm

Oragel-M (Unimed), Oral Gel, Tk. 50/15 gm

Oramic (Alco), Oral Gel, Tk. 50/10 gm

Oroconazol (Incepta), Oral Gel, Tk. 50/15gm

Orogurd (Eskayef), Oral Gel, Tk. 50/15gm

11.3.3 MOUTHWASH AND GARGLES

Mouthwash freshens the mouth and it has got a mechanical cleansing action.
Sodium chloride and **thymol glycerins**

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are also very useful mouthwash. **Hydrogen peroxide** is an oxidizing agent and is very much useful in the treatment of acute ulcerative gingivitis (Vincent's infection). Since the organisms involved in these cases are anaerobes, mouthwashes containing **hydrogen peroxide** are useful. It produces a mechanical cleansing action due to frothing when it comes in contact with oral debris. A **Chlorhexidine** mouthwash may be used for oral infection or when tooth brushing is not possible. **chlorhexidine** has a specific effect for inhibition of the formation of plaques on teeth. For mucosal infection povidone iodine mouthwash may be used. As significant amount of iodine may absorb so it should not be used for not more than 14 days. Thymol mouthwash to be used as mouth wash.

CHLORHEXIDINE GLUCONATE^[ED]

Indications: oral hygiene and plaque inhibition

Caution: If desquamation occurs then it must be discontinued

Side-effects: mucosal irritation., reversible brown staining of teeth and parotid gland swelling may occur

Dose: rinse mouth with 10 ml, for about 1 minute twice daily.

Preparations: chlorhexidine gluconate 0.2% mouth wash

Proprietary Preparations

ORAL-C (*Unimed*), Mouthwash, 0.2%, Tk. 75.00/125 ml

Oralon (*ACI*), Mouthwash, 0.2%, Tk. 35.13/100 ml

POVIDONE IODINE^[ED]

Indication : oral hygiene

Cautions : pregnancy and breast-feeding

Contraindications : patients with thyroid disorders or those receiving lithium therapy

Side-effects: idiosyncratic mucosal irritation and hypersensitivity reactions. It may interfere with thyroid function tests and with tests for occult blood

Proprietary Preparations

Povidone Iodine 1%

Arodin (*Aristo*), Gargle & Mouthwash , Tk. 35.00/100 ml;

Betadine (*Mundipharma*), Gargle & Mouthwash, Tk. 60.00/50 ml; Tk. 95/100 ml

Cleanser (*General*), Gargle & Mouthwash, Tk. 25/100 ml

Povisep (*Jayson*), Gargle & Mouthwash, Tk. 35/100 ml

Povin (*Opsonin*), Gargle & Mouthwash, Tk. 18.86/100 ml

Viodin (*Square*), Gargle & Mouthwash, Tk. 30/100 ml

MENTHOL, THYMOL , EUCALYPTOL, METHYL SALICYLATE

Indications : antiseptic mouth wash

Menthol 0.042 gm + Thymol 0.064 gm + Eucalyptol 0.092 gm + Methyl Salicylate 0.060 gm/100m;

Lister Coolmint Antiseptic Mouthwash (*General*), Tk. 145.00/250 ml; Tk. 80/120 ml

Lister Original Antiseptic Mouthwash (*General*), Tk 140.00/ml; Tk. 80.00/120 ml

Lister Total Care Anticavity Mouthwash (*General*), Tk. 75.00/120 ml; Tk. 140/250 ml

Listoral Cool Mint (*ACI*), Mouth Wash, Tk. 75.28/120 ml; Tk. 140.53/250 ml

Listoral Original (*ACI*), Mouth Wash, Tk. 75.28/120 ml; Tk. 140.53/250 ml

Orostar Cool Mint (*Square*), Mouth wash, Tk. 75.00/120 ml; Tk. 140.00/250 ml

Orostar Original (*Square*), Mouth wash, Tk. 75.00/120 ml; Tk. 140.00/250 ml

Orostar plus (*Square*), Mouth wash, Tk. 85.00/120 ml; Tk. 150.00/250 ml

Thymol 0.063 gm + Eucalyptol 0.091 gm + Menthol 0.042 gm /100ml

Lister Zero Mouthwash (*General*), Mouthwash, Tk. 80.00/120 ml

Lister Total Care Anticavity Mouthwash (*General*), Mouthwash, 0.063 gm + 0.091 gm + 0.042 gm /100ml, Tk. 145.00/250 ml