1. Name of the medicinal product

CHOLESTYRAMINE FOR ORAL SUSPENSION USP

2. Qualitative and quantitative composition

SR. NO.	NAME OF THE INGREDIENTS	PHARMACOPEIAL SPECIFICATION	LABLE CLAIM	OVERAGES %	QTY. / 5 GM	PURPOSE
ACTIVE INGREDIENTS						
1.	Cholestyramine resin*	USP	4gm	5.00%	4.200 gm	API
INACTIVE INGREDIENTS						
2.	Anhydrous lactose	BP	-	0.00%	0.625 gm	Diluent
3.	Sodium methyl paraben	BP	-	0.00%	0.006 gm	Preservative
4.	Colloidal silicon dioxide	USP	-	0.00%	0.006 gm	Glidant
5.	Sodium propyl paraben	BP	-	0.00%	0.004 gm	Preservative
6.	Essence pineapple powder	INHOUSE	-	0.00%	0.091 gm	Flavour
7.	Sunset yellow	INHOUSE	-	0.00%	0.0005 gm	Colour
8.	Saccharin sodium	BP	-	0.00%	0.018 gm	Sweeteners
9.	Tribasic calcium phosphate	BP	-	0.00%	0.050 gm	Diluent

* 5.00% Overages are added on label claim

3. Pharmaceutical form

Oral Powder

4. Clinical particulars

4.1 Therapeutic indications

- Primary prevention of coronary heart disease in men between 35 and 59 years of age and with primary hypercholesterolaemia who have not responded to diet and other appropriate measures.
- Reduction of plasma cholesterol in hypercholesterolaemia, particularly in those patients who have been diagnosed as Fredrickson's Type II (high plasma cholesterol with normal or slightly elevated triglycerides).
- Relief of pruritus associated with partial biliary obstruction and primary biliary cirrhosis.
- Relief of diarrhoea associated with ileal resection, Crohn's disease, vagotomy and diabetic vagal neuropathy.
- Management of radiation-induced diarrhoea.

4.2 Posology and method of administration

Adults: For primary prevention of coronary heart disease and to reduce cholesterol: After initial introduction over a three to four week period, 3 to 6 Cholestyramine sachets per day, administered either as a single daily dose or in divided doses up to four times daily, according to dosage requirements and patient acceptability. Dosage may be modified according to response and can be increased to 9 sachets per day if necessary.

Children 6 - 12 years:

The initial dose is determined by the following formula:

$$\frac{\text{Child's Weight in Kg} \times \text{Adult Dose}}{70}$$

Subsequent dosage adjustment may be necessary where clinically indicated. To minimize potential gastrointestinal side effects, it is desirable to begin all therapy in children with one dose of Cholestyramine daily. The dosage is then increased gradually, every five to seven days to the desired level for effective control.

Children under 6 years: Cholestyramine should not be used in children under 6 years. There are no data to support its use.

4.3 Contraindications

Cholestyramine is contraindicated in patients who have shown hypersensitivity to the active substance or to any of the Excipients.

In patients with complete biliary obstruction, since Cholestyramine cannot be effective where bile is not secreted into the intestine.

4.4 Special warnings and precautions for use

- Reduction of serum folate concentrations has been reported in children with familial hypercholesterolaemia. Supplementation with folic acid should be considered in these cases.
- Since Cholestyramine may interfere with the absorption of fat soluble vitamins, the diet may require supplementation with Vitamins A, D and K during prolonged high dose administration.
- Chronic use of Cholestyramine may be associated with increased bleeding tendency due to hypoprothrombinaemia associated with Vitamin K deficiency. This will usually respond promptly to parenteral Vitamin K administration. Recurrences can be prevented by oral administration of Vitamin K.
- There is a possibility that prolonged use of Cholestyramine resin in high doses may produce hyperchloremic acidosis, since it is the chloride form of an anion exchange resin. This is especially true in younger and smaller patients where the relative dosage may be higher.
- Cholestyramine contains aspartame, a source of phenylalanine.

4.5 Interaction with other medicinal products and other forms of interaction

- Cholestyramine may delay or reduce the absorption of certain drugs (such as digitalis, tetracycline, chlorothiazide, warfarin and thyroxine). The response to concomitant medication should be closely monitored and appropriate adjustments made if necessary.

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- Cholestyramine may interfere with the pharmacokinetics of drugs that undergo enterohepatic recirculation.
- Patients should take other drugs at least one hour before or 4-6 hours after Cholestyramine to minimise possible interference with their absorption.

4.6 Pregnancy and lactation

The safety of Cholestyramine in pregnancy and lactation has not been established and the possibility of interference with absorption of fat soluble vitamins should be considered.

4.7 Effects on ability to drive and use machines

No studies on the effect on the ability to drive and use machines have been performed.

4.8 Undesirable effects

Blood and lymphatic system disorders: Bleeding tendencies due to hypoprothrombinemia (Vitamin K deficiency) as well as Vitamin A (night blindness has been reported rarely) and D deficiencies.
Metabolism and nutrition disorders: Anorexia, hyperchloremic acidosis in children.
Gastrointestinal disorders: Constipation, Abdominal discomfort, flatulence, nausea, vomiting, diarrhea, heartburn, dyspepsia and steatorrhea.
Skin and subcutaneous tissue disorders: Rash and irritation of skin, tongue and perianal area.
Musculoskeletal and connective tissue disorders: Osteoporosis.

4.9 Overdose

One case of medication error experienced heartburn and nausea after taking Cholestyramine 27g three times a day for a week. The potential problem in overdosage would be obstruction of the gastrointestinal tract.

5. Pharmacological properties

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Bile acid sequestrants, **ATC code:** C10AC01.
Cholestyramine resin absorbs and combines with the bile acids in the intestine to form an insoluble complex which is excreted in the faeces. This results in a continuous, though partial, removal of bile acids from the enterohepatic circulation by preventing their reabsorption. The increased faecal loss of bile acids leads to an increased oxidation of cholesterol to bile acids and a decrease in serum cholesterol levels and low density lipoprotein serum levels. Cholestyramine is hydrophilic but it is not soluble in water, nor is it hydrolysed by digestive enzymes.
In patients with partial biliary obstruction, the reduction of serum bile acid levels reduces excess bile acids deposited in the dermal tissue with resultant decrease in pruritus.

5.2 Pharmacokinetic properties

The Cholestyramine resin in not absorbed from the digestive tract.

5.3 Preclinical safety data

No further significant information.

6. Pharmaceutical particulars

6.1 List of Excipients

- Anhydrous lactose
- Sodium methyl paraben
- Colloidal silicon dioxide
- Sodium propyl paraben
- Essence pineapple powder
- Sunset yellow
- Saccharin sodium
- Tribasic calcium phosphate

6.2 Incompatibilities

None known.

6.3 Shelf life

36 months

6.4 Special precautions for storage

Store in a dry place at a temperature below 30°C.

6.5 Nature and contents of container

5X 10 X 5 gm sachets pack , packed in printed and laminated carton.

6.6 Special precautions for disposal and other handling

Not applicable.

7. Marketing authorisation holder

West Coast Pharmaceutical Works Ltd, Ahmedabad

8. Marketing authorisation number(s)

Not applicable.

9. Date of first authorisation/renewal of the authorisation

Not applicable.

10. Date of revision of the text

April, 2019