SUMMARY OF PRODUCT CHARACTERISTICS

1. Name of the Finished Pharmaceutical Product:

1.1 Product Name **:** KCHEK (Calcium Polystyrene Sulphonate Oral Powder)

1.2 Strength **:** 15 g powder in 1 sachet

1.3 Pharmaceutical Form **:** Oral Powder

2. Qualitative and Quantitative Composition

Each sachet contains:
Calcium polystyrene sulfonate BP…15 g
Excipients .....q.s.

For excipients, see 6.1.

3. Pharmaceutical Form: Oral Powder for reconstitution

4. Clinical Particulars

4.1 Therapeutic Indications

Calcium polystyrene sulfonate is indicated in patients with hyperkalemia associated with anuria or severe oliguria. It reduces serum levels of potassium and removes excess potassium from the body.
Calcium polystyrene sulfonate is indicated in all states of hyperkalemia due to acute and chronic renal failure; examples include use following abortion, complicated labor, incompatible blood transfusion, crush injury, prostatectomy, severe burns, surgical shock, and in cases of severe glomerulonephritis and pyelonephritis. Calcium polystyrene sulfonate can also be useful in patients requiring dialysis. Serum potassium levels in acute renal failure often reach dangerous heights before a rise in blood urea indicates the need for hemodialysis.
Calcium polystyrene sulfonate can be used to reduce these potassium levels and thereby postpone the need for the use of the artificial kidney machine until other causes make it necessary. Patients on regular hemodialysis therapy may develop shunt difficulties and underdialysis occurs, resulting in serious hyperkalemia. In these circumstances it is advisable to give the resin to control hyperkalemia during the period of underdialysis. Monitoring serum potassium and calcium levels should be undertaken at regular intervals.

4.2 Posology and Method of Administration

Treatment with the resin should be given as soon as the serum potassium level rises above 6 mmol/L (23.5 mg per 100 mL). The action may be delayed for one or two days since maximal exchange probably takes place in the colon. Exchange will continue until all the resin has been voided (this may be one or two days after administration has been discontinued). For this reason, resin therapy should be stopped when the serum potassium level has fallen to 5 mmol/L, otherwise, the continued action may lead to potassium depletion.

The precise daily dose should be decided on the basis of regular clinical and serum electrolyte determination. The amount of potassium taken up by the resin will be largely determined by the length of time it is exposed to the high potassium concentration in the fecal water in the colon. For this reason, a tendency towards constipation should be encouraged and purgative drugs should be avoided.

For adults the usual dose is 15 g three or four times a day. The resin given by mouth as a suspension in a small amount of water (3 to 4 ml per g of resin), or it may be mixed with some sweetened vehicle but not with fruit juices, which contain potassium.

Children should be given 1 g/kg body weight of Calcium polystyrene sulfonate daily in divided doses, in acute hyperkalemia. In maintenance therapy the dose may be reduced to 0.5 g/kg body weight daily in divided doses. Calcium polystyrene sulfonate should be given orally, preferably with a drink or a little jam or honey. It should not be given in fruit drinks and some carbonated beverages, since these have a high potassium content.

4.3 Contraindications

Calcium polystyrene sulfonate should not be administered to patients with:

- Serum potassium < 5 mmol/L
- Conditions associated with hypercalcemia (hyperparathyroidism, multiple myeloma, sarcoidosis or metastic carcinoma)
- A history of hypersensitivity to polystyrene sulphonate resins
- Obstructive bowel disease
- Oral administration of Calcium polystyrene sulfonate is contraindicated in neonates. Administration of the resin in neonates with reduced gut motility (postoperatively or drug induced) is contraindicated.

4.4 Special Warnings and Special Precautions for Use

WARNING:

In neonates, Calcium polystyrene sulfonate should not be given by the oral.

Gastrointestinal injuries: Cases of gastrointestinal stenosis, intestinal ischemia, ischemic colitis, rectal haemorrhage, gastrointestinal necrosis and intestinal perforation with fatal outcomes have been reported in association with Calcium polystyrene sulfonate use. The majority of these cases reported the concomitant use of sorbitol. Risk factors for gastrointestinal adverse events were present in many of the cases including prematurity, history of intestinal disease or surgery, hypovolemia, immunosuppressant

therapy, severe burns, and renal insufficiency and failure. Concomitant administration of sorbitol is not recommended.

PRECAUTION:

Hypokalemia

During treatment with Calcium polystyrene sulfonate the possibility of severe potassium depletion should be considered. Adequate clinical control, as well as biochemical control by daily estimation of serum electrolytes and blood urea levels, is essential during treatment especially in patients on digitalis. To prevent serious hypokalemia, administration of the resin should be discontinued as soon as the serum potassium level falls to 5 mmol/L.

Other electrolyte disturbances

Like all cation-exchange resins, Calcium polystyrene sulfonate is not totally selective for potassium. Hypomagnesemia and/or hypercalcemia may occur. Accordingly, patients should be monitored for all applicable electrolyte disturbances.

Hypercalcemia has been reported in well dialysed patients receiving calcium resin, and occasionally in patients with chronic renal failure. Many patients in chronic renal failure have low serum calcium and high serum phosphate, but some, who cannot be screened out beforehand, show a sudden rise in serum calcium to high levels after therapy with calcium resin. The risk emphasizes the need for adequate biochemical control. Serum calcium levels should be estimated at weekly intervals to detect the early development of hypercalcemia. The dose of administered calcium resin should be reduced to levels at which hypercalcemia and hypokalemia are prevented.

Other risks

In the event of clinically significant constipation, treatment with the resin should be discontinued until normal bowel motions are resumed. Magnesium-containing laxatives should not be used.

The patient should be positioned carefully when ingesting the resin, to avoid aspiration, which may lead to bronchopulmonary complications.

Children and neonates

In neonates, Calcium polystyrene sulfonate should not be given by the oral route.

In both children and neonates, particular care should be observed with rectal administration, as excessive dosage or inadequate dilution could result in impaction of the resin.

Due to the risk of gastrointestinal tract hemorrhage or colonic necrosis, particular care should be observed in premature infants or low birth weight infants.

Pregnancy

Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract. No data are available about the use of polystyrene sulfonate resins in human pregnancy.

Lactation

Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract. No data are available about the use of polystyrene sulfonate resins in human lactation.

4.5 Interaction with other FPPs and other forms of interaction

Concomitant use not recommended:

Concomitant administration of sorbitol with Calcium polystyrene sulfonate is not recommended due to cases of intestinal necrosis and other serious gastrointestinal adverse reactions, which may be fatal.

To be used with caution:
Digitalic drugs: The toxic effects of digitalis on the heart, especially various ventricular arrhythmias and atrioventricular (A-V) nodal dissociation, are likely to
be exaggerated if hypokalemia and/or hypercalcemia develop, even in the face of serum digoxin concentrations in the 'normal range'.
Cation donating agents: These may reduce effectiveness of the resin in binding potassium.
Non-absorbable cation-donating antacids and laxatives: Systemic alkalosis has been reported after cation-exchange resins were administered orally in combination with non-absorbable cation-donating antacids and laxatives such as magnesium hydroxide and aluminum carbonate.
Aluminum hydroxide: Intestinal obstruction due to concretions of aluminum hydroxide has been reported when aluminum hydroxide was combined with the resin (sodium form).
Lithium: Possible decrease of lithium absorption.
Thyroxine: Possible decrease of thyroxine absorption.

4.6 Pregnancy and lactation

Pregnancy
Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract. No data are available about the use of polystyrene sulfonate resins in human pregnancy.
Lactation
Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract. No data are available about the use of polystyrene sulfonate resins in human lactation.

4.7 Effects on ability to drive and use machines

There is no information available for effect of Calcium polystyrene sulfonate on ability to drive and use machine.

4.8 Undesirable effects:

Gastrointestinal disorders:
Intestinal intolerance due to the gritty consistency and bulk of the resin may be manifested by the appearance of general adverse effects including nausea, vomiting, gastric irritation, anorexia, constipation and occasionally, diarrhea. These adverse effects may be relieved by intermittent therapy and the use of mild laxatives where constipation is a factor. Fecal impaction following rectal administration, particularly in children, and gastrointestinal concretions (bezoars) following oral administration, have been reported. Gastrointestinal stenosis and intestinal obstruction have also been reported. This could possibly due to co-existing pathology or inadequate dilution of the resin. Gastrointestinal ischemia, ischemic colitis, rectal haemorrhage, gastrointestinal tract ulceration or necrosis which could lead to intestinal perforation have been reported which is sometimes fatal. The majority of cases have been reported with concomitant use of sorbitol.

Metabolism and nutrition disorders:
In accordance with its pharmacological actions, Calcium polystyrene sulfonate may give rise to hypokalemia and hypercalcemia and their related clinical manifestations. Hypercalcemia has been reported in well dialysed patients receiving calcium resin, and occasionally in patients with chronic renal failure.
Respiratory, thoracic and mediastinal disorders:
Some cases of acute bronchitis and/or bronchopneumonia associated with inhalation of particles of calcium polystyrene sulfonate have been described.

4.9 Overdose:

Biochemical disturbances resulting from overdosage may give rise to clinical signs and symptoms of hypokalemia, including irritability, confusion, delayed thought processes, muscle weakness, hyporeflexia, and eventually frank paralysis. Apnea may be a serious consequence of this progression. Electrocardiographic changes may be consistent with hypokalemia or hypercalcemia; cardiac arrhythmia may occur. Appropriate measures should be taken to correct serum electrolytes (potassium, calcium). The resin should be removed from the alimentary tract by appropriate use of laxatives or enemas.

5 Pharmacological Properties

5.1 Pharmacodynamic Properties

Calcium polystyrene sulfonate is a cation exchange resin prepared in the calcium phase. Each gram of resin has a theoretical in vitro exchange capacity of about 1.3 to 2 millimoles (mmol) of potassium (K^+). In vivo, the actual amount of potassium bound will be less than this. The sodium (Na^+) content of the resin is less than 1 mg/g. The calcium content is 1.6 to 2.4 mmol/g. The resin is insoluble in water. Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract. Calcium polystyrene sulfonate acts by a cumulative process throughout the gastrointestinal tract, removing potassium ions which are excreted in the feces.
As the resin passes through the colon, it comes into contact with fluids containing increasing amounts of potassium. In the cecum the concentration of Na^+ and K^+ are similar to those in the small intestine. In the stool water of the sigmoid colon there may be 6-38 mmol/L sodium and 14-44 mmol/L potassium. The result is that potassium is taken up in increasing amounts in exchange for calcium ions. The length of time the resin remains in the body is a decisive factor in its effectiveness. For this reason oral administration is more effective than the use of enemas which should, if possible, be retained for 9 hours. The efficiency of potassium exchange is unpredictably variable. The resin is not selective for potassium.

5.2 Pharmacokinetic Properties:

The resin is insoluble in water. Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract. Calcium polystyrene sulfonate acts by a cumulative process throughout the gastrointestinal tract, removing potassium ions which are excreted in the feces. As the resin passes through the colon, it comes into contact with fluids containing increasing amounts of potassium. In the cecum the concentration of Na^+ and

K+ are similar to those in the small intestine. In the stool water of the sigmoid colon there may be 6-38 mmol/L sodium and 14-44 mmol/L potassium. The result is that potassium is taken up in increasing amounts in exchange for calcium ions. The length of time the resin remains in the body is a decisive factor in its effectiveness.

5.3 Preclinical Safety Data

Single dose toxicity studies with oral, intraperitoneal or subcutaneous administration of calcium polystyrene sulphonate did not reveal a risk of acute toxicity. No further preclinical studies with calcium polystyrene sulphonate are available.

6.0 Pharmaceutical Particulars:

6.1 List of Excipients

Sr. No.	Name of Excipient
1	Aspartame
2	Essence Lemon Dry

6.2 Incompatibilities:

Not Applicable

6.3 Shelf Life : 24 Months

6.4 Special Precautions for Storage:

Store at a temperature not exceeding 30°C. Protect from light and moisture.

6.5 Nature and contents of Container:

15 gm powder in sachet; Such 10 Sachets are packed in printed laminated carton along with the Pack Insert.

6.6 Instruction for use and handling: Not applicable

7 Marketing Authorization Holder:

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8 Number(s) in the national register of finished pharmaceutical products

08801/09721/NMR/2022

9 Date of First Authorization/Renewal of the Authorization:

Jul 5, 2023

10 Date of Revision of the text: Not Applicable