SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE MEDICINAL PRODUCT
ZINCO-K 15 mg/5 ml syrup

2. QUALITATIVE AND QUANTITATIVE COMPOSITION
Each 5 ml (1 spoon) syrup contains,

Active substance:
66 mg zinc sulphate heptahydrate equivalent to 15 mg zinc.

Excipients:

Sorbitol (70%) (E420)	2.15g
Methyl paraben (E218)	5 mg
Maltitol (E965)	1.2 g
Sunset yellow (E110)	0.03 mg

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM
Syrup
Clear solution in yellow-orange colored with aromatic odor.

4. CLINICAL PARTICULARS
4.1. Therapeutic indications
It is used in the prevention or treatment of zinc deficiency and in the treatment of pediatric diarrhea.

4.2. Posology and method of administration
Posology/ frequency of administration and duration of the treatment:
Unless recommended otherwise by the doctor, it is used as follows;

Age range	Recommended dose (mg/day)	Maximum tolerated dose (mg)	Spoon
9-13 years	8	23	1 spoon (15 mg)
14-18 years	11	34	1-2 spoons (15 mg-30 mg)
19 years and over	11	40	1-2 spoons (15 mg-30 mg)

Zinc can be used as an adjunct to the treatment of diarrhea in children older than 6 months, provided that it is not longer than 7 days and not more than 20 mg / day (1 spoon).

Method of administration:
For oral use only.
It is drunk directly from the spoon before or after meals or with meals.

Additional information for special populations:
Renal/Hepatic failure: The efficacy and safety of zinc in patients with kidney and liver failure has not been studied.

Due to an increased risk of zinc accumulation in the body in patients with renal failure, caution should be exercised in cases of kidney failure.

Pediatric population:
Zinc should be administered to pediatric patients as specified in the posology section. Unless otherwise recommended by the doctor, since dosage adjustment cannot be made, it should not be used in infants between 0-6 months.

Geriatric population:
The efficacy and safety of zinc in elderly patients has not been studied.

4.3. Contraindications
It is contraindicated in patients who are allergic to zinc salts or any of the other ingredients of syrup.

4.4. Special warnings and precautions for use
It is not appropriate to use zinc in diarrhea of unknown origin seen in adults.

It is not used for the treatment of pediatric diarrhea due to the high amount of zinc given at a time in products containing 30 mg of zinc.

It is suitable to use from 6 months on products containing zinc where the dosage can be adjusted (pipette / syringe).

It can be used with foods, but should be avoided with foods rich in calcium, phosphorus or phytate.

The use of the drug should be discontinued and a doctor should be consulted in patients who develop severe nausea, vomiting or acute dyspepsia.

Long-term or high dose intake may be associated with copper deficiency.

Due to the content of sorbitol (E420) and maltitol (E965), patients with rare hereditary problems of fructose intolerance should not take this medicine.

Methyl paraben (E218) contained in it may cause allergic reactions (possibly delayed).

Sunset yellow (E110) contained in it may cause allergic reactions.

4.5. Interaction with other medicinal products and other forms of interaction

Concomitant intake of zinc salts with tetracyclines and penicillamines may reduce the efficacy of zinc; therefore a 3-hour interval should be allowed between the intake of these agents and zinc.

High dose iron preparations inhibit the zinc absorption and zinc may reduce iron absorption.

Zinc may reduce the absorption of fluoroquinolones (ciprofloxacin, levofloxacin, moxifloxacin, norfloxacin and ofloxacin).

Oral contraceptives may decrease plasma zinc levels.

Food rich in bran or fiber as well as dairy products may reduce zinc absorption.

Penicillamine and trientin may reduce zinc absorption; also zinc may reduce the absorption of these two agents.

Antacids may reduce the bioavailable of zinc sulfate.

Foods containing high phytic acid (inositol) and coffee form chelates with zinc compounds. It should not be taken with food and drink (other than water) to ensure optimum absorption of zinc salts taken orally.

Additional information for special populations
There were no interaction studies for special populations.

Pediatric population
There were no interaction studies for pediatric population.

4.6. Fertility, pregnancy and lactation
General advise
Pregnancy category: C

Women of childbearing potential / Birth control (contraception)
Oral contraceptives may reduce plasma zinc levels.
Women of childbearing potential should use it under doctor control.

Pregnancy
ZINCO-K passes through the placenta, so it should be used under doctor control during pregnancy.

Animal studies are not adequate with respect to effects on pregnancy, embryonic/fetal development and/or birth and/or postnatal development. The potential risk for humans is unknown.

ZINCO-K should not be used during pregnancy unless it is necessary.

Breast-feeding
ZINCO-K passes into breast milk; therefore it should be used under the control of a doctor during breastfeeding.

Fertility
There is no impact on the reproductive capability.

4.7. Effects on ability to drive and use machines
There were no investigations on the ability to drive and use machines for the target population.

4.8. Undesirable effects
The specified undesirable effects were classified according to the following frequencies: Very common (≥ 1/10), common (≥ 1/100 to ≤1/10), not common (≥ 1/1000 to ≤ 1/100), rare (≥ 10000 to ≤1/1000), very rare (≤ 1/10000), and not known (cannot be estimated based on available data).

Blood and lymph system disorders:
Not common: Neutropenia, leukopenia - anemia

Immune system disorders:
Very rare: Allergic reactions

Nervous system disorders:
Not common: Dizziness, headache, nervousness, drowsiness

Vascular disorders:
Very rare: Hypotension, arrhythmia, electrocardiographic changes in potassium deficiency

Gastrointestinal disorders:
Common: Vomiting
Not common: Nausea, abdominal pain, dyspepsia, gastric irritation, gastritis, diarrhea

General disorders and administration site conditions:
Not known: irritability, lethargy and headache
Long term intake may be associated with copper deficiency.

Reporting of suspected adverse reactions
Reporting suspected adverse reactions after authorization of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via Turkish Pharmacovigilance Center (TÜFAM). (www.titck.gov.tr; e-mail: tufam@titck.gov.tr; tel.: 0 800 314 00 08; fax: 0 312 218 35 99)

4.9. Overdose and treatment
In cases of overdose symptoms such as hypotension, dizziness, drowsiness and vomiting may occur.

Zinc sulfate is corrosive in overdose. Symptoms are corrosion and inflammation of the mucous membrane of the mouth and stomach; ulceration of the stomach followed by perforation may occur.

Gastric lavage and emesis should be avoided. Milk and water should be given immediately. Chelating agents such as sodium calcium edetate may be useful.

5. PHARMACOLOGICAL PROPERTIES

5.l. Pharmacodynamic properties
Pharmacotherapeutic group: Mineral supplement
ATC Code: A12CB01

Zinc is an essential trace element with the required daily amount of 0.3 mg/kg body weight. The major sources of zinc are lettuce and green salad, brewer's yeast, liver, sea foods and milk. Milk contains about 2-3 g/liter of zinc.

Zinc is required in order to perform the function of metalloenzymes of more than 2000 such as carbonic anhydrase, carboxypeptidase A, alcohol dehydrogenase, alkaline phosphatase and RNA

polymerase. Zinc is mainly used in stabilization of DNA, RNA and protein throughout the body. It is also required to form structure in nucleic acids, proteins and cell membranes and is involved in physiological functions such cell growth and division, sexual maturation and reproduction, wound healing, immunity, dark adaptation and scotopic vision, normal taste and smell perception. The biochemical functions of zinc are becoming more apparent in zinc deficiency. The most affected tissues from zinc deficiency are fast-growing tissues (connective tissue in the wound granulations, sperm, embryo, fetal cells).

The acute toxicity of oral zinc compound is low. The use of the 1-2 g of zinc sulphate (134-168 ml) at a time and the use of the 3-5 g of zinc sulphate (403-373 ml) at a time may lead to toxic symptoms and death, respectively.

It has been noted that symptoms of chronic toxicity which may occur with oral administration of the high therapeutic doses (even at doses of 660 mg / day) for a long time were not detected. It should be monitored whether the plasma copper levels are decreased.

5.2. Pharmacokinetic properties

General characteristics

Zinc sulfate heptahydrate is a water-soluble, white and crystalline powder. Zinco-K syrup is a yellow color clear solution. The pH of the solution is 3.0 – 6.0.

Absorption:

When zinc is taken orally, it is absorbed from the small intestines (60% from the duodenum, 30% from ileum, and 10% from jejunum) with a specific mechanism. Like iron, it is isolated in mucosal cells by the zinc-binding proteins and then transmitted to serum albumin in the mucosal cell membrane. The dietary zinc is transferred to plasma by passing the enterocyte with intraluminal message.

Distribution:

Normal plasma concentration is between 0.7 and 1.5 g/ml. The 84% of zinc is bound to albumin in plasma, %15 bound to α2-macroglobulin and %1 bound to amino acids. The plasma concentration of a patient received 50 mg of oral zinc (equivalent to 220 mg of zinc sulphate) is reached to 2.5 g/ml in 2-3 hours. The plasma half-life is 3 hours. In human blood, 80% of the zinc is found in carbonic anhydrase enzyme in erythrocytes, 3% in leukocytes, and a small amount in platelets. Dietary zinc, hormones (glucocorticoids, glucagon, epinephrine), stress, inflammatory diseases affect the zinc level in plasma.

In case of the zinc deficiency, the loss in each tissue is different; zinc level in plasma, liver, bone and testis decreases while remains same in hair, skin, hearth and skeletal muscle.

Biotransformation:

Zinc does not undergo any biotransformation; it is excreted unchanged.

Elimination:

The 2.5-5.5 mg/day of zinc is excreted from the gastrointestinal tract. Renal excretion is the fixed amount in tubular secretion with the 300-700 microgram/day. It is also excreted in sweat.

Linearity/Non-linearity:

The pharmacokinetics is linear. Plasma levels show an increase depending on the administered doses.

5.3. Preclinical safety data
Not identified.

6. PHARMACEUTICAL PARTICULARS

6.l. List of excipients
Sorbitol (70%) (E420)
Maltitol (E965)
Citric acid monohydrate
Methyl paraben (E218)
Glycerine
Orange flavor
Sunset yellow (E110)
Purified water

6.2. Incompatibilities
There was no evidence for the incompatibilities of ZINCO-K with any drug or substance.

6.3. Shelf life
24 months

6.4. Special precautions for storage
Store at room temperature below 25°C.

6.5. Nature and contents of container
ZINCO-K is marketed in 5 ml PET spoons covered with aluminum foil, and as 20 and 28 spoons. The presentation form of 20 spoons is also packaged in a PVC separator.

6.6. Special precautions for disposal and other handling
Any unused medicinal products or waste materials should be disposed of in accordance with "Regulation for the Disposal for Medicinal Waste" and "Regulation for the Control of Packaging and Packaging Waste".

7. MARKETING AUTHORISATION HOLDER

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8. MARKETING AUTHORISATION NUMBER:

237/90

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION:

Date of first authorization: 08.12.2011
Date of latest renewal: 14.06.2017

10. DATE OF REVISION OF THE TEXT:

08.06.2020