

URALYT-U®

GRANULES

DRUGS-ABOUT.COM

Composition

Each 100 g of the granules contains:

Active Ingredient

Potassium sodium hydrogen citrate (6:6:3:5) 97.1 g

1 measuring spoon (approximately 2.5 g of the granules) contains
Potassium sodium hydrogen citrate (6:6:3:5) 2427.7 mg

and is equivalent to 11 mEq potassium
11 mEq sodium
27 mEq citrate

Other Ingredients

Oil of lemon, yellow orange S (E 110).

1 g Uralyt-U® contains 0.172 g or 4.4 mmol potassium.

1.0 g Uralyt-U® contains 0.1 g or 4.4 mmol sodium, equivalent to 0.26 g sodium chloride.

Mechanism of Action

Uric acid is sparingly soluble or completely insoluble in solutions of greater acidity (i.e. pH below 6), and under these conditions, it forms crystals and in unfavourable circumstances may grow into stones. Uralyt-U action is based on the fact that it can stabilize the pH of urine within the correct pH range of 6.2 to 6.8. Thus Uralyt-U improves the solubility of uric acid and prevents the formation of uric acid crystals (stones) and also redissolves any crystals (stones) that are already present.

Uralyt-U is free from carbohydrates and can therefore safely be taken by diabetics.

Pharmacological properties

Salts of strong bases with weak acids are suitable for alkalinization (neutralisation therapy) and the acid component is assumed to be metabolisable. The citrate ion from alkali citrates undergoes oxidative metabolic breakdown to CO₂ or bicarbonate. The base excess resulting from the remaining alkali ions is eliminated via the kidneys and produces an increase in urine pH.

Neutralisation or alkalinization of the urine can be achieved by oral administration of alkali citrates, the response being dose-dependent.

1 g of potassium sodium hydrogen citrate (8.8 mmol alkali) causes the urine pH to increase by 0.2 – 0.3 units. As a result the dissociation rate increases and hence the solubility of uric acid or cystine does too. Litholysis of uric acid calculi is radiologically demonstrated.

Besides urine alkalinization citrate excretion is raised as a result of an increased citrate secretion and simultaneous lowering of calcium excretion.

These mechanisms lead to a decrease of the activity product of calcium oxalate, because in the weak base citrate forms stable complexes with calcium.

Furthermore, the citrate ion must be regarded as a very effective physiological inhibitor of calcium oxalate (and calcium phosphate) crystallisation and aggregation of these crystals. Increased concentrations of uric acid in urine remain soluble, hence a heterogeneous crystallisation of calcium oxalate is avoided.

Pharmacokinetics

Bioavailability of Uralyt-U is 100%.

Citrate undergoes almost complete metabolic breakdown. Only 1.5 to 2% of the original dose appears unchanged in the urine.

Ingestion of 10 g potassium sodium hydrogen citrate yields approximately 36 mmol of citrate; this is equivalent to less than 2% of the daily turnover of citrate involved in energy metabolism within the body.

After a one-day intake of potassium sodium hydrogen citrate the equivalent amounts of sodium and potassium are quantitatively excreted via the kidneys within 24 -28 hours. During long-term administration, the daily excretion of sodium and potassium is in equilibrium with the daily intake.

No significant changes in blood gases or in serum electrolytes have been observed. This indicates that by virtue of renal regulation of alkalization, the acid-base balance of the body remains intact and that, provided renal function is adequate, any possibility of cumulation of sodium or potassium can be excluded.

Indications

Uralyt-U is used to dissolve uric acid calculi in the urinary tract and to prevent further stone formation.

Contraindications

Patients on sodium-free diets/Patients on severe sodium restriction .

Acute or chronic renal failure.

Renal impairment with oliguria or azotemia, untreated Addison's disease, hyperadrenalism associated with adrenogenital syndrome, extensive tissue breakdown as in severe burns, acute dehydration, heat cramps, adynamia episodica hereditaria and hyperkalemia of any etiology.

Serious disorders of acid-base balance (metabolic alkalosis).

Not to be used in the presence of infection associated with phosphate stones and in chronic urinary tract infections caused by microorganisms producing urease (urea-splitting bacteria).

Uralyt-U has to be avoided in case of increased sensitivity against potassium – sodium citrate , yellow-orange S or other ingredients of the product

Warnings

Patients with impaired renal function should be kept in bed while the dose of Uralyt-U is being adjusted. In patients with cardiac failure receiving digitalis, it should be borne in mind that the average daily dose of Uralyt-U (10 g granules) contains approximately 1.7 g of potassium. When a low sodium diet has been prescribed, it should be noted that 10 g of the granules also contain approximately 1 g of sodium. Patients with urinary tract infections should continue antibacterial therapy during treatment with Uralyt-U.

No studies during pregnancy have been carried on in animals and humans.

Preclinical Data

According to the results obtained from investigations in animals, potassium sodium hydrogen citrate has a very low toxicity. Chronic tests in dogs and rats revealed that oral doses up to 1.2 g/kg or 3 g/kg bodyweight were safe.

Toxicological tests on reproduction in rats and rabbits at 2 g/kg bodyweight revealed no teratogenic or embryotoxic/fetotoxic effects.

Adverse Reactions

In common with other potassium preparations, Uralyt-U may cause gastric irritation; this may be minimized by taking the drug with or after meals. Less frequently a laxative effect (diarrhea or loose bowel movements) may occur. Yellow-orange may induce allergy.

Precautions

Before starting therapy all circumstances/malconditions that may be in favour of urinary calculi should be reconsidered. The same is true if there exists a specific therapy (adenoma of parathyroid glands, malignoma of uric acid calculi etc.).

Before taking the first dose the serum electrolytes should be determined and renal function should be monitored. Furthermore, the acid base status should be checked when renal tubular acidosis (RTA) is suspected.

Caution:

This remedy contains the colouring agent yellow orange S (E110) which may induce allergic reactions including asthma in a sensibilised person. Allergy is more often seen in people reacting to acetoxybenzoic acid (acetylsalicylic acid).

The 24-hour fluid intake should be at least 2-2 1/2 litres. For cardiac patients, a lower fluid intake may be necessary and should be taken in small allotments. Loss of fluid by intense sweating, vomiting, or diarrhea must be replenished by taking extra fluid. Alkalinising mineral waters may be recommended.

When there is a pronounced tendency to stone formation, and in cases complicated by gout, it is important to adhere to a low protein diet, or it may be necessary to avoid excessive consumption of meat or fat. Offal (brain, heart, liver and kidneys) should be avoided.

Sodium citrate and citrate salt preparations containing sodium should be used with caution in patients with congestive heart failure (sodium retention may occur), hypertension and toxemia in pregnancy (to prevent exacerbation).

There is an increased risk of gastrointestinal lesions when using potassium citrate-containing preparations.

Drug Interactions

Uralyt-U should not be given to patients receiving potassium-sparing diuretics/aldosterone antagonists such as amiloride, triamterene or spironolactone because they diminish renal potassium excretion.

Simultaneous administration of citrate- and aluminium- containing compounds can result in a raised aluminium absorption. When treatment with such preparations is required, administration should therefore be carried out at different intervals of not less than 2 hours.

Concurrent use of potassium citrate with angiotensin converting enzyme ACE inhibitors, heparin, nonsteroidal anti-inflammatory agents or other potassium-containing medications may lead to an increase in serum potassium concentrations and hyperkalemia, which may lead to cardiac arrest especially in patients with renal insufficiency.

Concurrent use of citrates with quinidine may inhibit urinary excretion and therefore prolong the duration of action of quinidine.

Concurrent use of potassium citrate with digitalis glycosides may increase the risk of hyperkalemia in digitalized patients and potentiate the arrhythmogenic effect of the cardiac glycosides. Therefore, careful monitoring of serum potassium concentrations is recommended.

Concurrent use of citrates with methenamine is not recommended because alkalinizing the urine by citrates may inhibit the effects of methenamine.

Dosage and Administration

To ensure success, it is essential to follow the instructions carefully. The best results can only be obtained by close cooperation on the part of the patient. The treatment is divided into two stages:

- 1) Initial adjustment of the dose of Uralyt-U to a level which brings the pH of the urine into the desired range (6.2 to 6.8).
- 2) Long term administration of Uralyt-U with regular checks by the patient.

The enclosed measuring spoon holds 2.5 g of the granules. The granules should be dissolved by stirring in half a glass of water or fruit juice and the resulting solution taken preferably after meals.

The dose of Uralyt-U is adjusted in accordance with the response.

This is done as follows:

- 1) Measure the reaction of the urine with the indicator paper and determine the pH.
- 2) Enter the pH value (colour number) on the test chart.
- 3) Take the correct dose (number of measuring spoonfuls of Uralyt-U) and enter it on the chart.

The pH value of the urine must be checked before each dose of Uralyt-U. This pH value (5.2, 5.5, 5.8, 6.2, 6.5, 6.8, 7.0, 7.4) shows how the previous dose of Uralyt-U has worked. The morning test shows the effect of the previous evening's dose, the midday test shows the effect of the morning's dose, etc.

For most patients, it has proved satisfactory to take an average daily dose of 4 measures of the granules (10 g Uralyt-U) spread uniformly over the day in accordance with the following schedule:

Time	Number of spoonfuls
morning as early as possible	1
midday (2 - 3 p.m.)	1
evening as late as possible (about 10 p.m.)	2

This is a standard dosage. In many cases it will achieve satisfactory adjustment and keep the urine pH within the correct range (6.2 to 6.8).

However, not all patients react uniformly to the standard dose. For this reason the dose must be individually adjusted in accordance with the pH as measured. It should, however, be noted that any necessary correction of a dose is done on the following day.

For example, if at midday the pH value is found to be too high (7.0 or 7.4), there is no point in immediately cutting down the next dose. A test result of "7.0 or 7.4" at midday means that the morning dose was too high. The right course is to reduce the morning dose on the next day so that the pH at midday will then fall within the correct range.

The same applies to other measurements. For example, if one morning the pH is found to be too low (e.g. 5.8), this means that too small a dose of the granules was taken on the previous evening. Therefore, the next evening the dose must be raised. When changing the dose it is advisable to increase it or decrease it in steps of half a spoonful only.

How to use the indicator paper and text chart

The special indicator paper (enclosed) consists of 100 yellow paper strips and a colour scale with pH numbers. Every morning, and again at midday and in the evening, before taking Uralyt-U, one paper strip is torn off and dipped into the fresh urine for a few seconds. Alternatively it may be held in the stream. For this purpose, the paper strip is held with the enclosed peg, this prevents the hands from being wet by the urine. The colour of the strip will alter and should then at once be carefully compared with the colour scale. After matching the paper strip with the colour scale, the corresponding colour number is marked with a cross in the appropriate space on the test chart (morning, midday, evening). Not until this has been done should the dose of the granules be entered. The number of measuring spoonfuls should be written in the space directly after the time.

When the dose has been correctly adjusted, the tests carried out three times daily before each dose, will give colour numbers of 6.2, 6.5 or 6.8. If the colour number is over 7.0, it is essential to reduce the dose.

Conversely, underdosage is shown by colour numbers 5.2, 5.5 and 5.8. If the colour number is 6.2 it may be assumed that the dose is just enough. However, the aim should always be to keep within the 6.5 to 6.8 range. 7.0 which is to be considered the upper limit.

Overdosage

Provided renal function is adequate, there is no likelihood of any unwanted effects on normal metabolic parameters, even after taking doses higher than those recommended, since the excretion of any base excess by the kidney provides a natural regulatory mechanism which ensures maintenance of acid-base balance.

Any rise above the recommended urine pH should in no circumstances be allowed to persist for more than a few days, since at considerably high pH levels there is an increased risk of phosphate crystallisation and the long-term establishment of a definite alkalotic metabolic state is in any case undesirable. Inadvertent overdosage can be corrected at any time by reducing the dose: if necessary appropriate measures for the treatment of metabolic alkalosis may be considered

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