

# KETOANALOGUES + ESSENTIAL AMINO ACIDS

## KETORELS Renal Nutrition Therapy



### FORMULATION:

Each film-coated tablet contains:

Calcium-4-methyl-2-oxo-valerate ( $\alpha$ -ketoanalogue to leucine, calcium salt) .....	101 mg
Calcium-3-methyl-2-oxo-butyrate ( $\alpha$ -ketoanalogue to valine, calcium salt) .....	86 mg
Calcium-2-oxo-3-phenylpropionate ( $\alpha$ -ketoanalogue to phenylalanine, calcium salt) .....	68 mg
Calcium-3-methyl-2-oxo-valerate ( $\alpha$ -ketoanalogue to isoleucine, calcium salt) .....	67 mg
Calcium-DL-2-hydroxy-4-(methylthio) butyrate ( $\alpha$ -hydroxyanalogue to methionine, calcium salt) .....	59 mg
L-Lysine Acetate USP .....	105 mg
L-Threonine USP .....	53 mg
L-Histidine USP .....	38 mg
L-Tyrosine USP .....	30 mg
L-Tryptophan USP .....	23 mg

Total nitrogen content per tablet: 36 mg

Calcium content per tablet: 1.25 mmol = 50 mg

### DESCRIPTION:

Ketoanalogues + Essential amino acids tablet contains all amino acids essential for uremic patients; five of them are ketoanalogues in the form of calcium salts. Therefore, it allows reduction in the nitrogen supply and provides calcium. It is a medication for the treatment of chronic kidney disease patients on conservative management therapy (CKD stage I, II, III). In combination with very low protein diet, it helps in delaying the progression of kidney disease in the pre-dialysis period.

### PHARMACODYNAMICS:

Ketoanalogues + Essential amino acids allows the intake of essential amino acids while minimizing the aminonitrogen intake. Following ingestion, the ketoanalogues are transaminated by taking nitrogen from non-essential amino acids, thereby decreasing the formation of urea by re-using the amino group.

The levels of accumulating uremic toxins are decreased. Keto- and/or hydroxy-acids do not elicit hyperfiltration of residual nephrons. Ketoacid-containing supplements have a positive influence on the renal hyperphosphatemia and secondary hyperparathyroidism and can improve renal osteodystrophy. The use of Ketoanalogues + Essential amino acids in association with a very low protein diet allows a reduced intake of nitrogen while avoiding the deleterious consequences of inadequate dietary protein intake and malnourishment.

### PHARMACOKINETICS:

In normal individuals, there is an increase in the plasma level of ketoanalogues, 10 minutes after oral ingestion. These levels reach values that are approximately 5 times higher than the initial level. Peak levels are reached within 20-80 mins, and normal levels are reached again after 90 mins. Gastrointestinal absorption is thus very rapid. In the plasma, a simultaneous increase in levels of the ketoanalogues and the corresponding amino acid show that transamination of the ketoanalogues is very rapid. Due to the natural pathways of disposal of  $\alpha$ -ketonic acids in the organism, it is probable that exogenous intakes are very rapidly integrated into metabolic cycles. Ketoacids follow the same catabolic pathways as the classical amino acids.

### THERAPEUTIC ACTION:

Normalizes metabolic processes, promotes recycling product exchange, reduces ion concentration of potassium, magnesium and phosphate.

### INDICATIONS:

For prevention and therapy of damages due to faulty or deficient protein metabolism in chronic renal insufficiency in connection with a limited protein food of 40 g/day (for adults) and less, i.e. generally in patients with glomerular filtration rate (GFR) below 25 mL/min.

### DOSAGE AND ADMINISTRATION:

For oral use.

Four to eight tablets, three times a day

1 tablet / 5 kg body weight/day

Should be taken with food (swallow whole, do not chew/crush) or as prescribed by the physician.

### DURATION OF TREATMENT:

The product is administered as long as the glomerular filtration rate (GFR) is below 25 mL/min, and concomitantly, dietary protein is restricted to 40 g/day or less (adults).

### CONTRAINDICATIONS:

- Allergy and hypersensitivity to any content of this drug
- Hypercalcemia
- Disturbed amino acid metabolism
- Caution use for patient with phenylketonuria

### WARNING:

Ketoanalogues + Essential amino acids contains phenylalanine. It should be used with caution in phenylketonuria patients.

### PREGNANCY AND LACTATION:

No experience has been made so far with the administration of Ketoanalogues + Essential amino acids during pregnancy and lactation.

### ADVERSE EFFECTS:

Hypercalcemia may develop. In this case, it is recommended to decrease vitamin D intake.

If the hypercalcemia persists, reduce the dosage of Ketoanalogues + Essential amino acids as well as any source of calcium.

### DRUG INTERACTIONS:

The simultaneous administration of medicaments containing calcium (e.g., acetate) may lead to pathological increase of the serum calcium level or intensification.

As the uremic symptoms improve under Ketoanalogues + Essential amino acids, a possible administration of aluminum hydroxide should be reduced. Pay attention to a reduction of serum phosphate. In order not to interfere with absorption, do not take drugs together with Ketoanalogues + Essential amino acids that form sparingly soluble compounds with calcium (e.g., tetracyclines), quinolones (e.g., ciprofloxacin, norfloxacin), iron, fluoride, and estramustine-containing drugs. Between the intake of Ketoanalogues + Essential amino acids and drugs from the mentioned categories, a period of at least 2 hours should pass. The susceptibility towards heart/cardiac-active glycosides and hence, also the risk of arrhythmia increase with the rise of the blood calcium concentration.

### PRECAUTIONS:

Ketoanalogues + Essential amino acids should be taken during meals to allow proper absorption and metabolism into the corresponding amino acids. The serum calcium level should be monitored regularly. Ensure sufficient supply with lactation.

### OVERDOSE AND TREATMENT:

No symptoms have been observed to date.

### CAUTION:

Foods, Drugs, Devices, and Cosmetics Act prohibits dispensing without prescription.

For suspected adverse drug reaction, report to the FDA: [www.fda.gov/ph](http://www.fda.gov/ph). Seek medical attention immediately at the first sign of any adverse drug reaction.

### STORAGE CONDITION:

Store at temperatures not exceeding 30°C.

KEEP ALL MEDICINES OUT OF CHILDREN'S REACH.

### AVAILABILITY:

Alu/Alu Blister Pack x 10's (Box of 10's & 100's)

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Manufactured by:  
**WEST-COAST PHARMACEUTICAL WORKS LTD.**  
F.P. No. 17, 16/5, Meldi Estate, B/S. Meldi Mata Temple,  
Near Gota Railway Crossing, At & Post, Gota, Tal City,  
Ahmedabad-382 481, Gujarat State, India

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**AMBICA INTERNATIONAL CORPORATION**  
#9 Amsterdam Extn., Merville Park Subd.,  
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**SCRIPTMED, INC.**  
104-A Residencia 8888 Condominium Bldg., Pearl  
Drive cor. Amethyst St., Ortigas Center, Pasig, Metro Manila