LEVOCARNITINE (Systemic)

Indications

Note: Bracketed information in the Indications section refers to uses that are not included in U.S. product labeling.

Accepted

Carnitine deficiency (treatment)¾Levocarnitine is indicated for treatment of primary systemic carnitine deficiency, a genetic impairment of normal biosynthesis or utilization of levocarnitine from dietary sources 33 , or for the treatment of secondary carnitine deficiency resulting from an inborn error of metabolism 33

Deficiency of levocarnitine may lead to elevated triglyceride and free fatty acid concentrations, reduced ketogenesis, and lipid infiltration of liver and muscle. Severe, chronic deficiency may lead to hypoglycemia, life-threatening acidosis, progressive myasthenia, hypotonia, lethargy, hepatomegaly, hepatic encephalopathy, hepatic coma, cardiomegaly, congestive heart failure, cardiac arrest, muscle weakness and failure to thrive, neurologic disturbances, and impaired infant growth and development. 33

Carnitine deficiency, in end-stage renal disease (ESRD) patients on hemodialysis (prevention and treatment) *¾Parenteral levocarnitine is indicated for the prevention and treatment of carnitine deficiency in patients with end-stage renal disease supported on hemodialysis. 31

[Carnitine deficiency, secondary to valproic acid toxicity (prophylaxis and treatment)] *¾Levocarnitine oral solution is used for the prevention and treatment of carnitine deficiency secondary to valproic acid toxicity. 22, 23, 24

Precautions to Consider

Carcinogenicity

Studies have not been done in either animals or humans. 33

Mutagenicity

Studies in Salmonella typhimurium , Saccharomyces cerevisiae , and Schizosaccharomyces pombe found no evidence of mutagenicity. 33

Pregnancy/Reproduction

Pregnancy¾Adequate and well-controlled studies have not been done in humans.
Studies in rats and rabbits at levocarnitine doses up to 3.8 times the usual adult dose (based on body surface area (mg/m 2) have not demonstrated impaired fertility or fetal harm. 33

FDA Pregnancy Category B. 33

Breast-feeding

It is not known whether levocarnitine is distributed into breast milk. Problems in humans have not been documented. Carnitine occurs naturally in human milk. 33

Studies in dairy cows indicate that levocarnitine is distributed into dairy milk. 31

Pediatrics

Appropriate studies on the relationship of age to the effects of levocarnitine have not been performed in the pediatric population. However, pediatrics-specific problems that would limit the usefulness of this medicine in children are not expected.

Geriatrics

Appropriate studies on the relationship of age to the effects of levocarnitine have not been performed in the geriatric population. However, geriatrics-specific problems that would limit the usefulness of this medication in the elderly are not expected.

Drug interactions and/or related problems

The following drug interactions and/or related problems have been selected on the basis of their potential clinical significance (possible mechanism in parentheses where appropriate)¾not necessarily inclusive (>> = major clinical significance):
Valproic acid

(requirements for carnitine may be increased in patients receiving valproic acid 3, 4, 22, 23, 24 )

Medical considerations/Contraindications

The medical considerations/contraindications included have been selected on the basis of their potential clinical significance (reasons given in parentheses where appropriate)¾ not necessarily inclusive (>> = major clinical significance).
Risk-benefit should be considered when the following medical problems exist

>> Seizures 33

(Seizures may occur in patients with or without pre-existing seizure activity; increased seizure frequency and/or severity has been reported in patients with pre-existing seizure activity)