CITICOLINE

CALYXIN

1 g Extended Release Tablet

NOOTROPIC

℞

CYDC

FORMULATION:
Each extended release tablet contains:
Citicoline sodium
equivalent to Citicoline..... 1 g

PRODUCT DESCRIPTION:
Reddish brown coloured, elongated, biconvex plain on both sides & film-coated extended-release tablet.

PHARMACODYNAMICS:
Citicoline is a complex organic molecule that functions as an intermediate in the biosynthesis of cell membrane phospholipids. Citicoline is also known as CDP-choline or cytidine diphosphate choline (cytidine 5'-diphosphocholine). CDP-choline belongs to the group of biomolecules in living systems known as nucleotides that play important roles in cellular metabolism.

The pharmacologic action of Citicoline appears to involve mechanisms that extend beyond phospholipid metabolism. Citicoline metabolites-choline, methionine, betaine, and cytidine-derived nucleotides enter a number of metabolic pathways.

Biochemical markers of cholinergic nerve transmission are known to be deficient in conditions characterized by degeneration of cholinergic neurons, such as Alzeimer's disease (AD). Citicoline modestly improves cognitive function in AD by serving as an acetylcholine precursor. The brain uses choline preferentially for acethylcholine synthesis, which can limit the amount of choline available for phosphatidylcholine production.

Citicoline has also been investigated as a therapy for stroke patients. Three mechanisms are postulated: (1) repair of the neuronal membrane via increased synthesis of phosphatidylcholine; (2) repair of damaged cholinergic neurons via potentiation of acetylcholine production; and (3) reduction of free fatty acid build-up at the site of stroke-induced nerve damage.

Citicoline protects cholinergic neurons from autocannibalism, a process in which membrane phospholipids are catabolized to provide choline for synthesis of acetylcholine. This occurs when choline supplies are depleted, necessitating sacrifice of membrane phospholipids to maintain neurotransmission. As an exogenous source of choline for acetylcholine production, Citicoline thus spares membrane phospholipids (in particular, phosphatidylcholine) and prevents neuronal cell death.

PHARMACOKINETICS:
Citicoline is a water-soluble compound with greater than 90-percent bioavailability. Citicoline is metabolized in the gut wall and liver. The products of exogenous Citicoline formed by hydrolysis in the intestinal wall are choline and cytidine. Following absorption, choline and cytidine are dispersed throughout the body, enter systemic circulation for utilization in various biosynthetic pathways, and cross the blood-brain barrier for resynthesis into Citicoline in the brain.
Citicoline elimination occurs mainly via respiratory, and urinary excretion, in two phases mirroring the biphasic plasma peaks. The initial peak in plasma concentration is followed by a sharp decline, which then slows over the next 4-10 hours. In the second phase, an initially rapid decline after the 24-hour plasma peak is similarly followed by a slower elimination rate. The elimination half-life of Citicoline is 56 hours.
Oral administration of Citicoline raises plasma levels of cytidine and choline in within six to eight hours. Prolonged administration for 42 and 90 days increases brain concentrations of phosphatidylcholine, phosphatidylethanolamine, and phosphatidylserine--the three major phospholipids in brain cell membranes. At a dose of 500 mg/kg per day phosphatidylcholine levels increased by 25 percent, phosphatidylethanolamine by 17 percent, and phosphatidylserine by 42 percent.

INDICATIONS:
It is used to increase blood flow and oxygen consumption in the brain and has been given in the treatment of cerebrovascular disorder (including ischaemic stroke), parkinsonism, and head injury.

DOSAGE AND ADMINISTRATION:
Disturbance of Consciousness Due to Head Injury or Brain Surgery: 100-500 mg, 1-2 times daily.
Psychologic or Neurologic Disorders: Disturbance of consciousness in the acute stage of cerebral infarction: 1 g once a day for 2 consecutive weeks.
Or as prescribed by the physician.

CONTRAINDICATIONS:
Patients hypersensitive to Citicoline and its components.

190 mm

PRECAUTIONS:
In acute and emergency condition Citicoline should be administered in conjunction with intracranial pressure-relieving drugs or homo static and treatment e.g., Hypothermy. If intracranial bleeding continues, avoid giving high dose Citicoline (>500 mg concomitantly), since it may exaggerate blood flow in brain. In case small dose of Citicoline (100-500 mg,2-3 times daily) may be needed.
Precaution should be given in patients with hypersensitivity.
For patients with disturbance of consciousness in acute stage of cerebral infarction, start of Citicoline Injection is recommended within two weeks after apoplectic stroke.

PREGNANCY:
Generally, Citicoline is avoided in pregnancy.

LACTATION:
Generally, Citicoline is also avoided in nursing mothers.

DRUG INTERACTIONS:
In combination with levodopa, Citicoline can increase effects of levodopa.

ADVERSE DRUG REACTIONS:
Hypersensitivity reaction: Rash.
Psychoneurologic: Insomnia, headache, dizziness, convulsion.
Gastrointestinal; Nausea, anorexia.
Hepatic: Abnormal liver function in laboratory measurement.
Eyes: Diplopia.
Others: Flushing, transient blood pressure changes or malaise.

OVERDOSE AND TREATMENT
Citicoline exhibits very low toxicity profile in humans. In a short term, placebo-controlled, crossover study, 12 healthy adults took citicoline at daily doses of 600 mg and 1000 mg and placebo for consecutive five-day periods. Transient headaches occured in four subjects on 600 mg dose, five on the 1000 mg dose, and one in placebo. No changes or abnormalities were observed in hematology, clinical biochemistry or neurological test.
The LD50 of a single intravenous dose of Citicoline was 4,600 mg/kg and 4,150 mg/kg in mice and rats, respectively.
In an unpublished acute toxicity study, free-base Citicoline was administered to male and female rats at a dose of 2000 mg/kg body weight for 14 days. No changes in body weight, deaths, clinical symptoms or gross pathological changes were observed.

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

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

STORAGE CONDITION:
Store at temperatures not exceeding 30ºC.
Keep all medicines out of reach of children.

AVAILABILITY:
Alu/Alu Blister Pack x 10's (Box of 10's)

DRP-8265-01
Date of First Authorization: January 21, 2022
Date of Revision of Package Insert: March 01, 2022

Manufactured by:
AKUMS DRUGS & PHARMACEUTICALS LTD.
(Plant I-Solid Oral Dosage Facility)
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Manufactured for:
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