Glutamine Glutamate Gaba Central Nervous System

Chapter 1 : Glutamine Glutamate Gaba Central Nervous System

Gaba, glutamine, glutamate oxidation and succinic semialdehyde dehydrogenase expression in human gliomas gliomas, glial cell derived central nervous system malig-nancies, are a heterogeneous, aggressive tumour type with poor prognosis. the incidence of isocitrate dehydrogenaseConditions. emphasis will also be placed on the central role of glutamate in the glutamine-glutamate and glutamine-gaba neurotransmitter cycles between neurons and astrocytes. finally, we provide a brief and selective discussion of neuropathology associated with altered cerebral glutamate levels.Depression viewed as a gaba/glutamate imbalance in the central nervous system 239 the role of the nmda receptor in the mechan ism of action of adds was confirmed in the variety of biochemical (nowak et al., 1993, 1996, 1998), electrophysiological (bobula et al., 2003) and behavioural studies (popik et al., 2000) in both rats and mice.Glutamine and glutamate—their central role in cell metabolism and function philip newsholme*1, cialized aspects of glutamine/glutamate metabolism of different glutamine-utilizing cells and in each case relate key aspects glutamate can then be converted into -amino butyric acid (gaba), ornithine, 2-oxoglutarate, glucose or glutathione.Of glutamate transporters in preventing excitotoxicity bryan fuchs. glutamine (gln, q) • most excitatory neurons in the central nervous system are glutamatergic (ed.). 1988 glutamine and glutamate in mammals. • lewin b. 1997 genes vi. • purves et al. 2001 neuroscience.Gaba, glutamate and glutamine were measured in the brain homogenates of the four groups. results: the results showed that ppa caused multiple signs of excitotoxicity, as measured by the elevation of glutamate and the glutamate/glutamine ratio and the decrease of gaba, glutamine and the gaba/glutamate ratio.Glutamine associated with hepatic failure may, by in-creasing brain gaba release, produce some of the manifestations of hepatic encephalopathy.-wang, l., maher, t.j., wurtman, r.j. oral l-glutamine increases gaba levels in striatal tissue and extracellular fluid. fasebj. 21, 1227-1232 (2007) key words: microdialysi.r' glutamate' neurotran

Into urea. in pancreatic b-cells, oxidation of glutamate mediates amino acid-stimulated insulin secretion. in the central nervous system, glutamate serves as an excitatory neurotransmittor. glutamate is also the precursor of the inhibitory neurotransmittor gaba, as well as glutamine, a potential mediator of hyperammonemic neurotoxicity.The influence of gaba metabolism on gaba neurotransmission: the role of metabolic regulatory a glutamine-glutamate-gaba cycle has been proposed1 in which glutamate released from neurons is taken up by since gs has a global role beyond the central nervous system, it is not likely to be a goodGamma-aminobutyric acid (gaba), the most important inhibitory neurotransmitter in the central nerve system, is produced from glutamate by the effect of the enzyme, glutamate decarbox-ylase (wu 1976). gaba and glutamate have adverse effects on the neuronal activity (mueller et al. 1982). it has been shown that gaba recep-Glutamate, gaba, and cns disease" a review jonathan e. walker department of neurology university of texas health science center dallas, texas 75235 accepted december 23, 1982 introduction it has been estimated that 30-40% of synaptic connections in the centralStudied. the maximal increases in the concentrations of excitatory (glutamate and aspartate) and inhibitory (gaba and glycine) amino acids were obtained in the cerebellum. glutamine and alanine the central pathways involved in the control of erectile measurements of glutamate, aspartate, glutamine, asparagine, glycine, taurine and gaba Glutamine uptake is crucial to neurotransmission in central excitatory and inhibitory neurons. neuronal glutamine is de-rived from astrocytes and is the major precursor for neuro-transmitter glutamate and -aminobutyric acid (gaba)1 (1–4). glutamine uptake into neurons is mediated largely by a sys-

In all cns regions. at the cpg level, glu and gaba realize functions of the main excitatory and inhibitory transmitters in the central link of the respiratory regulator. metabolism of glutamate and gaba glu and gaba are derivatives of one and the same amino acid, glutamine [2]. glutamate is known to be

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