

Malnutrition early in life impairs alpha-2 adrenoreceptor regulation of noradrenaline release in the rat cerebral cortex

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Experimental studies have shown that malnutrition early in life results in enhanced release of noradrenaline (NA) in the brain. The disturbed mechanism underlying this neurochemical disorder is poorly understood. To test the possibility that early malnutrition could disrupt the feedback mechanism regulating the release of NA at central axon terminals, the ability of the adrenoreceptor agonist clonidine to depress NA overflow was studied in rat cortex slices arising from malnourished rats. Protein-energy malnutrition was induced by increasing litter size from 8 to 18 pups per nurse. Results show that clonidine (5×10^{-6} M) induced a significant decrease of the spontaneous release of NA in occipital cortex slices obtained from 23-24 day- old normal rats and of the potassium-evoked release of NA in slices arising from normal animals of 45-50 days of age. On the contrary, clonidine induced a significant increase of both the spontaneous and evoked outflow of the neurotransmitter in slices ar