The precise role which iron plays in the activity of MAO is not yet known. It may be necessary either for the synthesis of MAO protein or it may act as a co-factor.

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Dihydropteridine reductase: enzyme characteristics, regional distribution and ontogenetic development

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The hydroxylation of tyrosine to dihydroxyphenylalanine (DOPA) is considered the rate limiting step in catecholamine synthesis. Tyrosine hydroxylase (TH) is the enzyme which catalyzes this reaction, and it requires the presence of a reduced pterine cofactor (PtH_2). The regeneration of the reduced pterine is accomplished by means of a pyridine nucleotide-dependent enzyme, quinoid dihydropteridine reductase (DHPR).

Dihydropteridine reductase has been detected in rat brain and it has been suggested that DHPR, and hence the level of reduced pterine, may be a controlling factor in catecholamine synthesis. Some of the characteristics of this enzyme, its regional distribution in rat brain, and the changes in its activity during brain development and aging will be described.

Dihydropteridine reductase is a NADH-dependent enzyme (Km 13 μM). It is inhibited by methotrexate *in vitro* but not *in vivo*. Its activity is 10^3 times higher than TH activity. Its regional distribution in the brain does not parallel the distribution of TH.

The brains of rats that have been sympathectomized by 6 OH dopamine treatment have DHPR activity unchanged. This finding, together with the regional distribution data, indicates that the enzyme is not located in the adrenergic nerve terminals.

The brains of rat fetuses after 13 days of gestation present DHPR activity that is around 20% of the activity found in adult rat brain. At birth the DHPR activity is increased to 60% of the adults and remains constant up to 20 days of age. This development is similar to the one known for tyrosine hydroxylase.

In another experiment we compared DHPR and TH activity using 3 month old and 24 month old rats. While there was no difference between the two groups in TH activity, the group of 24 month old rats showed a DHPR activity two times higher than the 3 month old group.

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