During postnatal development glutaminic acid (GA) participated as a stimulating neuromediator in the nervous system glutamatergic receptor formation. That is why we studied GA content in limbic cortex mitochondria (l₁ and l₂ area), hippocampus, hypothalamus, amygdala and midbrain reticular formation (RF) in 3-month and 1-year-old dogs, normally and during 5-, 12-, and 20-day starvation.

It was demonstrated that GA content was sharply decreased in the limbic cortex mitochondria (l₁ and l₂ area) and in hypothalamus in 1-year-old dogs, while in 3 month-old dogs it happened in hippocampus, amygdala and midbrain RF. Prolongation of food deprivation up to 20 days resulted in more expressed GA decrease in the limbic cortex mitochondria (l₁ and l₂ area) and hypothalamus than that in hippocampus, amygdala and midbrain RF. These changes were more evident on the 20th day than during 12-day starvation in the dogs of both ages.

Thus, the GA content decrease in the brain limbic system mitochondria various terms of starvation in the period of postnatal development may evidence the fact that significant changes took place in glutametergic synapses influencing the formation of the specialized cells of this brain system during postnatal ontogenesis.