SUMMARY

In this work, the detailed analysis of $GABA_B$–R/G protein coupling in the course of pre– and postnatal development of rat brain cortex indicated the significant intrinsic efficacy of $GABA_B$–receptors already shortly after the birth: at postnatal day 1 and 2. Subsequently, both baclofen and SKF97541–stimulated G protein activity, measured as the high–affinity [^{35}S]GTPγS binding, was increased. The highest level of agonist–stimulated [^{35}S]GTPγS binding was detected at postnatal days 14 and 15. In older rats, the efficacy, i.e. the maximum response of baclofen– and SKF97541–stimulated [^{35}S]GTPγS binding was continuously decreased so, that the level in adult, 90–days old rats was not different from that in newborn animals.

The potency of G protein response to baclofen stimulation, characterized by EC_{50} values, was also high at birth but unchanged by further development. The individual variance among the agonists was observed in this respect, as the potency of SKF97541 response was decreased when compared in 2–days old and adult rats.

The highest plasma membrane density of $GABA_B$–R, determined by saturation binding assay with specific antagonist [^{3}H]CGP54626AA, was observed in 1–day old animals. The further development was reflected in *decrease* of receptor number. The adult level was ≈3–fold lower than in new born rats.

The ontogenetic development of Na^+/K^+–ATPase, which was used as marker of the overall brain development, was completely different from that observed in the study of $GABA_B$–R–signaling cascade: plasma membrane density of Na^+/K^+–ATPase was continuously increased in the course of the whole postnatal period; the adult level was ≈3–fold higher than in new born (1–day–old) rats.

The high level of lipofuscin like pigments (LFP) was generated in rat brain cortex during the first 5 days of postnatal life. Maximum level of LFP was detected on the postnatal day 2. Starting from the postnatal day 10, LFP concentration returned down to the prenatal level. A new rise in LFP concentration was observed in 90–days old animals. This second increase of LFP may indicate the beginning of the aging process in rat brain cortex.