Signs of normal proliferation in the telencephalon of adult male songbirds (*Serinus serinus*), as shown by PCNA-positivity

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Key words: Adult male songbirds; Telencephalon; Matrix areas; PCNA.

SUMMARY

The immunocytochemical expression of Proliferating Cell Nuclear Antigen (PCNA) (a cycline that coadjuvates DNA polymerase δ) becomes appreciable in the cell cycle when DNA synthesis occurs; hence cells in the S phase can be revealed by means of monoclonal antibodies. Therefore, PCNA can be considered a marker of proliferation, and numerous literature reports have demonstrated the reliability of the PCNA test. Since normal neurogenic events can still occur in the brain tissue of adult homeothermic vertebrates (especially songbirds), we evaluated if the persistence of spontaneous proliferation could be revealed in adult male songbirds (*Serinus serinus*) using the PCNA marker, the same test we used previously to study the persistence of natural proliferation in the encephalon of adult heterothermic vertebrates. The patterns of PCNA positivity showed normal proliferation in the telencephalon of the adult male *Serinus serinus*. This activity was shown by cells interposed among the epithelial cells lining the lateral side of each ventricular cavity, both in correspondence to the apical tracts and declivities of the ependyma and arranged, here and there, either in groups or slightly separated. As in our previous studies on PCNA expression and persistence of spontaneous encephalic proliferation in adult poikilothermal vertebrates (in the telencephalon of *Podarcis*, *Triturus* and *Rana*, and in the telencephalon, mesencephalon and cerebellum of *Carassius*), the results of the present research largely agree with the findings of previous Authors, usually obtained with different methods. This agreement confirms the reliability of the PCNA test used for this type of investigation.

INTRODUCTION

It is now well known that undifferentiated cells persist into post-embryonic life in the brain of many species in almost all classes of Vertebrates. These cells are considered the legacy of the germinative layers lining the neural tube during embryo-