Alpha-bisabolol increases ecto-5’-nucleotidase/CD73 activity in glioma cell line: a possible involvement of A3 adenosine receptor

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Glioma corresponds to 78% of primary tumors in central nervous system. Despite advances in treatment, the prognosis of patients remains poor. Recently alpha-bisabolol (α-bisabolol), a small nontoxic sesquiterpene was reported as a potent cell death inductor on glioma cell lines. Moreover, studies have demonstrated the involvement of the ecto-5’-nucleotidase/CD73 and adenosine in the patophysiology of brain tumors. As α-bisabolol is rapidly incorporated into lipid rafts, we decided to evaluate a possible effect of this compound on ecto-5’-nucleotidase/CD73 (ecto-5’-NT/CD73) and the effect of adenosine, the product of ecto-5’-NT/CD73 activity on the cell death induced by the compound. α-bisabolol was obtained by Sigma. The C6 glioma cell line was cultured in adequate conditions. Effect on the cell number was assessed by cell counting in a hemocytometer and cell viability was measured by MTT assay. The ecto-5’-NT/CD73 activity was measured by Malachite Green method and to access the involvement of the adenosine A3 receptor, MRS1220, a selective antagonist of A3 receptor was used. Exposure of C6 glioma cells to concentrations of 35 µM, 45 µM and 55 µM lead to a decrease on cell number. The IC50 calculated was 48µM. Ecto-5’-NT/CD73 activity was significantly increased in cells treated with α-bisabolol. Treatment with MRS 1220 plus α-bisabolol reverted in approximately 60% the decrease on cell number promoted by α-bisabolol. Our data indicate a strong influence of α-bisabolol on ecto-5’-NT/CD73 activity and suggest that the enzyme and the A3 adenosine receptor are, at least partially, involved in the antiproliferative effect of α-bisabolol.

Keywords: Glioma, α-bisabolol; Ecto-5’- NT/CD73; adenosine

Support: FAPERGS and CNPq