

Effects of sialic acid from edible bird nest on cell viability associated with brain cognitive performance in mice

ABSTRACT

Background: Edible bird nest (EBN) is a natural food product rich in glycoprotein such as sialic acid, which has been reported to improve brain functions. The EBN is widely consumed due to its higher nutritional contents and antioxidant status; however, an interaction of EBN on brain cell metabolic activity and viability are still unclear. **Objective:** The objectives of this study were to identify the effect of sialic acid from EBN on the cell viability and to determine the appropriate concentration of sialic acid on cognitive performance in mice. **Materials and Methods:** The viability of pheochromocytoma and neuroblastoma cell lines were tested using the 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide assay. For in vivo study, 7-week-old female BALB/c mice were randomly assigned into four treatment groups and were treated with sialic acid for 21 days. At day 22, all mice were tested on cognitive performance by Y-maze test. **Results:** Treatment concentration of sialic acid extract and sialic acid standard at 60 µg/mL (0.6 ppm) increased cell viability and showed no cytotoxicity effects in pheochromocytoma and neuroblastoma cell lines. In addition, an administration of higher dose of sialic acid at 0.6 ppm in animals improved Y-maze test performance, which they showed significantly higher number of entries and time spent in the novel arm. **Conclusion:** Thus, the current study shows that the sialic acid extract at 0.6 ppm improved brain cognitive performance in mice associated with an increased viability of pheochromocytoma and neuroblastoma cell lines.

Keyword: Cell viability; Cognitive function; Edible bird nest; Mice; Sialic acid