

3. Results

3.1 Total phenolic compounds and beta carotene content

The present results showed that the total phenolic compound in the aqueous extract of ripened mango pulp of Namdokmai variety was 413.61 ± 17.28 mg of Gallic Acid Equivalent (GAE)/mg fruit weight and contained beta carotene at concentration of $6.19 \mu\text{g/g}$.

3.2 Effect of mango pulp extract on spatial memory

The current data clearly demonstrated that both the rats which received donepezil and vitamin C significantly decreased the escape latency but increased retention time as shown in figure 1 and 2 ($p\text{-value} < .001$ all; compared to the vehicle+AF64A). The mango pulp extract at all doses of 100 and 200 mg/kg BW also produced the same pattern and magnitude of changes ($p\text{-value} < .001$ all; compared to the vehicle+AF64A).

3.3 Neuroprotective effect of mango pulp extract

Our data showed that the rats which received either donepezil or vitamin C at a period of 2 weeks before and 1 week after AF64A administration showed the increased neurons density in all subregions of hippocampus ($p\text{-value} < .01$ all; compared to the vehicle+AF64A). The rats which received the mango pulp extract at doses of 200 mg/kg BW significantly enhanced neurons density in CA1, CA3 and dentate gyrus ($p\text{-value} < .01, .05$ and $.05$ respectively; compared to the vehicle+AF64A) while rats which received the extract at dose of 100 mg/kg BW showed the increased in only CA1 and CA3 ($p\text{-value} < .05$ all; compared to the vehicle+AF64A). The low dose of mango pulp extract in this study failed to produce a significant change as shown in figure 3.

3.4 Effect of mango pulp extract on acetylcholinesterase and lipid peroxidation

Figure 4 showed that rats which subjected to donepezil or vitamin C treatment plus AF64A revealed the reduction of acetylcholinesterase (AChE) activity in hippocampus ($p\text{-value} < .05$ all; compared to vehicle+AF64A). Rats which received the pulp extract at doses of 50, 100 and 200 mg/kg BW also decreased the activity of AChE ($p\text{-value} < .05, .01$ and $.05$ respectively; compared to the vehicle+AF64A). In addition, we also determined the level of malondialdehyde (MDA), a lipid peroxidation product, which used as indirect indicator of free radicals level. It was found that both rats which subjected to donepezil and those subjected to vitamin C significantly decreased MDA level in hippocampus ($p\text{-value} < .05$ all; compared to vehicle+AF64A). The animals which received the pulp extract at doses of 100 and 200 mg/kg BW were also decreased MDA level in the mentioned area ($p\text{-value} < .05$ and $.01$ respectively; compared to vehicle+AF64A) while the rats which subjected to low dose of the pulp extract failed to show the significant change of this parameter as shown in figure 5.