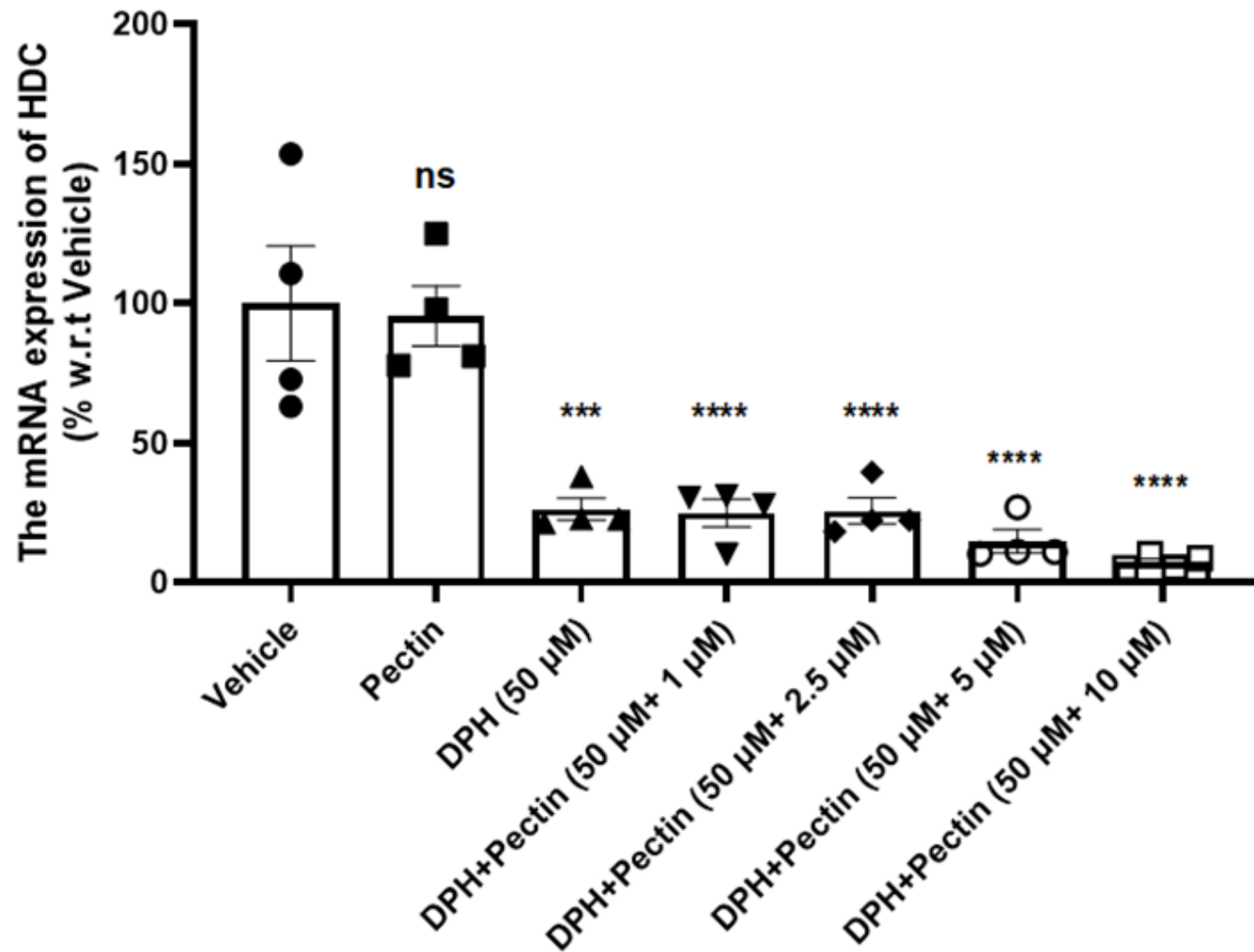




The API of sleep gel is Diphenhydramine HCL (DPH), an inverse agonist of histamine. DPH inversely agonizes the H1 receptors in nervous system, resulting in drowsiness. We used pectin as a facilitator of DPH pharmacological activity and checked its synergistic activity in Caco2 cells. We checked if addition of pectin lowers the mRNA levels of HDC, histidine decarboxylase, an enzyme that catalyzes the synthesis of histamine from histidine. Since HDC is responsible for converting histidine to histamine, a neurotransmitter crucial for regulating wakefulness and alertness. When HDC is inhibited, histamine levels drop, leading to increased sleepiness. Our results showed that addition of pectin and DPH, significantly lowers the HDC levels in Caco2 cells. Our data highlighted the improved ability of DPH to lower HDC in human cells. Therefore, the administration of a sleep gel containing diphenhydramine (DPH) and pectin significantly reduces histidine decarboxylase (HDC) levels and promotes sleep more effectively than diphenhydramine HCl alone.