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Food Preservatives Causes Neurobehavioral Alteration in Mammalian Model †

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Abstract: The recent research studied the Neurobehavioral effect of different doses of exposure of Sodium Nitrite and Sodium benzoate alone and in combination; these are known as food preservatives. With the arrival of modern life, many types of food preservatives have been enlisted by the food industry. These food preservatives were added to mice feed to work on neurobehavior (general exploration and anxiety), fear, depression, and activity of antioxidant enzymes, oxidative stress, Acetylcholine esterase, and neurotransmitter (Dopamine). Low and high dose exposure of sodium nitrite (20mg/kg and 40mg/kg of body weight) and sodium benzoate (15mg/kg and 30mg/kg of body weight) was given to 54 Swiss albino male mice randomly, allotted into six groups. The animals were observed for neurobehavioral disturbance. Anxiogenic effect of sodium benzoate and sodium nitrite was observed during OFT (Open Field Test), EPM (elevated plus maze), FST (Forced Swim Test), TST (Tail Suspension Test), and Novelty-suppressed Feeding test. Moreover, the noticeable effect of NaB and $NaNO_2$ on depression is expressed by prolonged immobilization during FST and EPM. Our results strongly provide sufficient scientific evidence that a causal link exists between test substances and inflection of anxiety, depression-like behaviors in mice, and points to the hazardous impact of sodium nitrite and sodium benzoate on public health.

Keywords: food preservatives; sodium nitrite; sodium benzoate; anxiety and fear; depression; Albino mice.

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Conflicts of Interest

The authors declare no conflict of interest. Authors PM and Sonia planned and executed the experiments and contributed to writing the manuscript.