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A Fractional Treatment to Food-Borne Disease Modeling by q- Homotopy Analysis Transform Method (q-HATM)

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Abstract: *A non-linear mathematical model has been proposed and examined here portraying impact of biological control of the expansion of the fly population and the transmission of food-borne illnesses. In the model's design, we made the assumption that the human population becomes exposed to food borne illnesses through close contact between those who are vulnerable and those who are already afflicted. In the same way that flies contaminate human food by bringing infectious disease bacteria from the outside in, vulnerable people can also become infected by indirect transmission. Additionally, we employ the fractional approach in the well-known technique known as q-HATM to mathematically analyze suggested model. This technique can be used to acquire the analytical findings of suggested model have convergent series with necessary computation of several important components.*

Keywords: q-HATM; Food-borne disease; Fractional differential equations; Homotopy Analysis Transform Method; Non-linear; Biological control.

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