Coronaviruses

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In Silico Modeling Of COVID-19 Pandemic Course Differentiation Using The FOD Model.

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Abstract:
Background: The strange and still unclear scenarios of Covid-19 pandemic development have raised the question about the reason for the observed essential state and personal differences concerning the expansion and severity of the infection process. Some custom activities are taken into consideration in an attempt to explain the phenomenon. Alcohol in the diet is suggested in this paper as the possible factor which could explain the observed differentiation. It easily penetrates cells modifying their natural internal environment, and independently influences tissues as the toxic agent being the source of acetyl aldehyde.
Objective: The process in which the cell seems to be the most sensitive to altered environmental conditions is the protein folding; in particular, its portion occurring in the endoplasmic reticulum where freshly synthesized polypeptides fold and then are introduced to the cell membrane influencing its property and in particular its fluidity, which is the critical parameter deciding the virus penetration into the cell.
Methods: The application of a mathematical model, fuzzy oil drop model FOD, expressing the influence of the environment on the protein folding process shows the mechanism of this influence.
Results: The differences between statistical assessment of epidemy in Europe and the Far East, which may be correlated with alcohol consumption, suggest the influence of diet on the status of epidemy in these regions.
Conclusion: The protein folding seems to be the process most sensitive to environmental conditions in the cell. The different diet customs, including the use of alcohol, may disturb the folding process, lowering as the result the number of proteins needed for cell membrane stability, thus increasing its fluidity and the cell susceptibility to virus penetration.
Observations presented in this paper are based on the initial period of pandemic development and have not been intentionally modified to prevent the influence of additional factors, like government activities or virus mutations.