Glucocorticosteroids in Case of Genetic Mutations, Autoimmune Diseases or COVID-19

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Glucocorticoids are effective drugs with multiple side effects. They can develop respiratory failure, similar to COVID-19. However, dexamethasone is effective for the treatment of severe COVID-19 cases. The idea of the project came from the desire to help the world by studying drugs and the interactions between them. The aim of the project was to study the devastating effect of COVID-19 and the study of drug interactions. We realized the study of the interactions between dexamethasone and other drugs, modeling the molecules by applying the specialized software Avogadro 1.2. and HyperChem 8.0. We studied the protein ACE2, Spike s 1 and the enzyme MTHFR using the RCSB Protein Data Bank. I observed the incidence of treatments in patients with COVID-19 and followed their post-COVID evolution. For radioactivity we used public data provided by satellite sensors. The dexamethasone-zinc complex with cysteine has a smaller volume than the one with homocysteine. The optimized Dexamethasone-Homocysteine-Zinc model shows a 3-fold higher volume than the non-optimized model, which stimulates further research, as patients with high homocysteine levels are at greater risk of developing complications after Sars-Cov-2 infection, which could help to elucidate some mechanisms. The optimized models of the molecular associations of dexamethasone iodine with cysteine or homocysteine are similar. Presumably, when exposed to iodine, patients with higher homocysteine levels would react similarly to the rest of the population. Common combinations of dexamethasone were with vitamin C, vitamin D, zinc, Amoxiplus, Famotidine, Paracetamol. Further studies and experiments will be required.

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