Characterization of MAS1 Tertiary Structure

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Hyperinflammation is the most severe clinical phase of Covid-19 disease and is characterized by high blood pressure in the lungs, which facilitates microthrombus formation, eventually leading to myocardial ischemia. Studies have revealed how the infection caused by the coronavirus SARS-CoV-2 can unbalance the Renin-Angiotensin System. In particular, the binding of Angiotensin Converting Enzyme 2 (ACE2) by the virus decreases the production of Angiotensin1-7 (Ang1-7) which cannot activate the MAS1 receptor and stabilize the pulmonary blood pressure. This research aimed to build by homology modeling the tertiary structure of the MAS1 receptor to allow the identification of possible drugs that can activate this G-Protein Coupled Receptor (GPCR). Such drug would indeed provide the patient a novel tool to fight the disease and thus increase the chances of recovery. The structure of the Ang1-7/MAS1 complex obtained represents the first of its kind, as there are no solutions yet in the literature. Furthermore, it has demonstrated a high degree of stability making the tertiary structure of MAS1 particularly reliable.