"Integrating Network Pharmacology and Component Analysis Study on Decoction of Traditional Chinese Medicines: *Polygonum multiflorum, Rehmannia glutinosa, Senna obtusifolia* and *Crataegus* in Hypertension"

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Traditional Chinese Medicine (TCM) is known to possess curative effect towards hypertension through holistic view. However, a formulation of *Polygonum multiflorum, Rehmannia glutinosa, Senna obtusifolia* and *Crataegus* which is used by Chinese practitioners in ameliorate hypertension remains unknown for their molecular mechanism. This is the first study to determine the molecular mechanism of Traditional Chinese Medicine formulation consisting of *Polygonum multiflorum, Rehmannia glutinosa, Senna obtusifolia* and *Crataegus* in hypertension. The compounds of methanolic extracts of the decoction were identified through Liquid chromatography-mass spectrometry-mass spectrometry. Oral bioavailability and drug likeness were calculated to filter identified compounds. Several databases such as SwissTargetPrediction, STRING, OMIM and KEGG were used to retrieve information of predicted targets in the purpose to develop a network using Cytoscape Version 3.8. Finally, enrichment analysis was performed to elucidate the mechanism behind the decoction. A total of 11 compounds were revealed to possess bioavailable and drug like based on Veber drug likeness parameters. The pathway analysis showed enrichment for pathways such as cardiac muscle contraction, fluid shear stress and atherosclerosis, dilated cardiomyopathy, renin-angiotensin system and hypertrophic cardiomyopathy (HCM) which are closely related to hypertension. The network pharmacology analysis manifest this TCM decoction ameliorate hypertension through other pathways instead of hypertension itself due to most of the targets are involved in HCM, causation by hypertension.

Keywords: *Polygonum multiflorum, Rehmannia glutinosa, Senna obtusifolia*, *Crataegus,* hypertension, network pharmacological analysis,cheminformatics

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