International Journal of PharmTech Research
CODEN (USA): IJPRIF, ISSN: 0974-4304, ISSN(Online): 2455-9563
Vol.9, No.5, pp 373-380, 2016

Hypotensive Effect of Tuber Based Artificial Rice on Hypertension Rats

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Abstract : Hypertension is one of public health problems in developed and underdeveloped countris. Food for hypertension prevention or treatement is still limited. One of food crops that contains bioactive compounds for hypertension prevention or treatment is tuber. Most of tubers contain phenolic compounds that have a role in hypertension management. *Dioscorea* sp or yam tubers contain tuber storage protein, namely dioscorin, that has an ability to inhibit angiotensin converting enzyme (ACE). ACE converts angiotensin I to angiotensinII that constricts blood vascular and increasesblood pressure. Artificial rice based on tubers was expected to provide food for hypertension treatment. This study aimed to examine the effect of tuber based artificial rice on blood pressure of salt induced hypertension rats. Artificial rice made from arrowroot, wild yam, lesser yam, greater yam, and cocoyan was separately fed to 5 groups of hypertensive rats *ad libitum*. As controls, a group of hypertensive rats was fed by rice IR 36 and a group of normotensive rats was fed by rice IR 36. Experiment was conducted for 4 weeks, and every week the systolic blood pressure of rats was examined. Body weight and feed intake were measured daily. Phenols content and dioscorin of tuber based artificial rice were also analyzed. The results showed that all types of tuber based artificial contained phenolic compounds and only yam based artificial rice had dioscorin. Tuber based artifical rice was able to reduce systolic blood pressure in hypertension condition. The greatest effect was found in wild yam artificial rice. The magnitude of reduction was wild yam > cocoyam > arrowroot > greter yam > lesser yam based artificial rice. Meanwhile, rice IR 36 did not exhibit blood pressure decline. This finding showed that not only yam based artificial rice was able to reduce blood pressure but also non yam tuber such as arrowroot and cocoyam. Phenolic compounds also influenced the reduction of blood pressure after tuber based artificial rice feeding.

Keywords : angiotensin converting enzyme, artificial rice, dioscorin, phenols, systolic blood pressure, tuber.

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