ANTI-ARTHRITIC AND ANTI-DIABETIC EFFECTS OF THE TRADITIONAL RICE (*Oryza sativa* L.) VARIETY 'KURULUTHUDA'

Perera W. P. D. and Rizvi E. M. J. M.*

Department of Biological Sciences, Faculty of Applied Sciences, South Eastern University of Sri Lanka, Sammanthurai, Sri Lanka *rizvijam@seu.ac.lk

Diabetes and arthritis are two chronic or non-communicable diseases that are a major threat to the health of the global population. Dietary interventions have been widely used in managing these diseases. Sri Lankan traditional rice varieties possess high nutritional and health values including low glycemic indices with antidiabetic effect. This in vitro study was carried out to evaluate the anti-arthritic and anti-diabetic properties of the methanolic extracts of the traditional rice variety 'Kuruluthuda'. Antiarthritic activity was tested by determining the percentage inhibition of protein denaturation using two methods i.e. the 'Bovine Serum Protein Denaturation Method (BSPD)' and 'Egg Albumin Denaturation Method (EAD)' of three concentrations (100, 250, 500 µg/ml) of the rice extract and the standard drug Diclofenac Sodium. The antidiabetic activity, was determined using two methods i.e. 'Glucose Uptake Capacity by Yeast Cells' and 'Glucose Adsorption Assay' of the extract and the standard drug Metformin. The data were analysed by ANOVA followed by Tukey's multiple comparison test (P < 0.05) using Minitab 17 version. The drug showed 88% of inhibition of protein denaturation at all three concentrations whereas the effect by rice extract was 55% at the low concentrations (100 and 250) by the BSPD method. The effect in the EAD method was 42% by both the extract and the drug. The glucose uptake by yeast at all four glucose concentrations of the drug was almost 90%. However, the glucose uptake by the rice extract decreased with increasing glucose concentrations which were 90%, 70%, 40% and 15% at 50, 100, 250 and 500 µg/ml, respectively, apparently due to the insufficiency of the rice extract concentration to cope up at higher glucose concentrations. The glucose adsorption activity of the rice extract was 19.8%. Thus, the rice variety 'Kuruluthuda' possesses both anti-arthritic and anti-diabetic effects. Further studies would lead to use of this variety in management of both these diseases.

Keywords: Anti-arthritic effect, Anti-diabetic effect, Kuruluthuda, Rice.