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ARE 24-HOUR URINARY BIOMARKERS OF FISH AND SOY INTAKES USEFUL PREDICTORS FOR CARDIOVASCULAR RISKS?

Background and Aim: WHO-coordinated CARDIAC (Cardiovascular Disease and Alimentary Comparison) Study covering over 60 populations in the world revealed sodium(Na) intakes and Na/potassium(K) ratio checked by 24-hour urine (24U) samples were associated positively with the age–adjusted mortality rates of strokes, and therefore, Na and Na/K ratios of 24U were proven to be useful predictors of strokes.1.2 Since CARDIAC study also proved significant inverse association of 24U biomarkers of fish and soy intakes, taurine (T) and isoflavones (I) with the age-adjusted mortality rates of coronary heart diseases (CHD),2.3 we investigated the association of these biomarkers with the risks of CHD.

Methodology: About 100 males and 100 females aged 48-56, from each study site, 50 in total in the world, were invited to health examination for anthropological examination and automated blood pressure measurement as well as fasting blood sampling and 24U collection by using "aliquot cups" for collecting easily 1/40th of voided urine each time. The quintiles of 24UT (T1-5) and 24UI (I1-5) were analyzed in relation to cardiovascular risks.4

Findings: The group who excreted both lowest 24UT and 24UI, T1-I1, showed significantly ($p<0.001$) higher BMI and serum cholesterol after age and sex adjustment than the group who excreted both highest 24UT and 24UI, T5-I5. The Odds ratios of obesity and hypercholesterolemia in the lowest T1-I1 were 8.6 and 7.7, significantly ($p<0.01, 0.001$) higher than in the highest T5-I5, but Odds ratio of hypertension was 1.4, not significant.

Conclusion: 24UT and 24UI were strongly associated with obesity and hypercholesterolemia, 2 major risks of CHD. Therefore, 24UT and 24UI are the predictors for CHD. When these are combined with 24UNa and 24UK, these 24U biomarkers obtained noninvasively are useful for objective estimation of individual nutritional situation and risk assessment of CHD and stroke, thus can be predictors for 2 major cardiovascular diseases.

Biography

Yukio Yamori is a Former WHO Expert Committee Member on Cardiovascular Diseases, Professor Emeritus of Kyoto University, and currently Director of Mukogawa Women's University Institute for World Health Development and President, Hyogo Prefecture Health Promotion Association. He is an honorary member for numerous organizations such as Stroke Council of American Heart Association and High Blood Pressure Research Council of Australia. He won CIBA Award for Hypertension Research from American Heart Association (1982), Beltz Award for Nutritional Factors-related to CVD (1993), the Order of Purple Ribbon from Japanese Government (1998) and Special Award from Japanese Society of Hypertension (2008) and Orders of the Sacred Treasure from Japanese Government (2012). He has contributed to research on pathogenesis of hypertension, stroke and atherosclerosis, gene analyses of cardiovascular diseases, development of models for cardiovascular diseases (SHR, SHRSP) and cardiovascular and nutritional epidemiology.

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