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Urine alkalization facilitates uric acid excretion.

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BACKGROUND:

Increase in the incidence of hyperuricemia associated with gout as well as hypertension, renal diseases and cardiovascular diseases has been a public health concern. We examined the possibility of facilitated excretion of uric acid by change in urine pH by managing food materials.

METHODS:

Within the framework of the Japanese government's health promotion program, we made recipes which consist of protein-rich and less vegetable-fruit food materials for H+-load (acid diet) and others composed of less protein but vegetable-fruit rich food materials (alkali diet). Healthy female students were enrolled in this consecutive 5-day study for each test. From whole-day collected urine, total volume, pH, organic acid, creatinine, uric acid and all cations (Na+,K+,Ca(2+),Mg(2+),NH_4+) and anions (Cl^-,SO_4(2-),PO_4^-) necessary for the estimation of acid-base balance were measured.

RESULTS:

Urine pH reached a steady state 3 days after switching from ordinary daily diets to specified regimens. The amount of acid generated ([SO_4(2-)] +organic acid-gut alkai) were linearly related with those of the excretion of acid (titratable acidity+ [NH4+] - [$HCO3^-$]), indicating that H+ in urine is generated by the metabolic degradation of food materials. Uric acid and excreted urine pH retained a linear relationship, where uric acid excretion increased from 302 mg/day at pH 5.9 to 413 mg/day at pH 6.5, despite the fact that the alkali diet contained a smaller purine load than the acid diet.

CONCLUSION:

We conclude that alkalization of urine by eating nutritionally well-designed food is effective for removing uric acid from the body.