A Study of the Effects of Ipriflavone Administration on Hemodialysis Patients with Renal Osteodystrophy: Preliminary Report

T.	Toru	Hyodo ^a
K.	Koji	Ono ^a
T.	Tsutomu	Koumi ^a
I.	Ikuo	Miyagawa ^a
T.	Toru	Okano ^b
T.	Takeshi	Kagawa ^b
H.	Hiroshi	Hagino ^b
H.	Hideaki	Kishimoto ^b
Y.	Yukinori	Oyama ^c
A.	Akemichi	Inoue ^c
S.	Soichiro	Doi ^d
T.	Takatomo	Morita ^d
T.	Tomohiro	Izumi ^e
N.	Noriaki	Tanaka ^e

^aDepartment of Urology and ^bDepartment of Orthopedics, Tottori University School of Medicine, ^cDepartment of Urology, Saiseikai Sakaiminato Hospital, ^dMorita Hospital and ^eIzumi Hospital, Yonago, Japan

Toru Hyodo, Department of Urology, Tottori University School of Medicine, 36-1 Nishi-machi, Yonago-shi 683 (Japan)

Dear Sir,

Ipriflavone, an isoflavone derivative synthesized by Chino (Hungary), is commercially available in the clinical treatment of osteoporosis in Japan. The mechanism of action of the drug involves inhibition of bone resorption by a direct action and also indirectly by enhancing the effect of estrogen by increasing calcitonin secretion. With our attention focused on the mechanism of action of this substance, in the present study we investigated changes in ALP, calcitonin and osteocalcin in the serum of hemodialysis patients with renal osteodystrophy after oral administration of ipriflavone in doses of 400–600 mg/day. Furthermore, blood concentrations of iprif-

lavone and its active metabolites were determined before and after hemodialysis in a patient who received 400 mg/day for 6 months. The subjects were 23 patients with decreased bone minerals demonstrated by microdensitometry, single photon absorptiometry or dual energy X-ray absorptiometry. The period of observation ranged from 1 to 9 months. The results showed that ALP levels were significantly decreased after administration of ipriflavone; the decrease was significant even in the group of patients with ALP levels above the upper limits of the normal range (normal level of serum ALP is defined as 2.5–10.0 Ka-U at our hospital). Calcitonin was

significantly increased 1 month after administration when compared with levels prior to treatment (normal level of

Table 1. Variations in serum ALP, calcitonin and osteocalcin

Student's t test. NS = Nonsignificant.

Effect of Ipriflavone on Hemodialysis Patients with Renal Osteodystrophy

115

Table 2. Serum concentrations of ipriflavone and its metabolites, and hematocrit (Ht)

calcitonin: less than 100 pg/ml). No significant change was found in osteocalcin (normal level: 2.5–8.5 ng/ml) (table 1). Levels of ipriflavone before and after hemodialysis, as shown in table 2, were not much greater than those in patients with normal kidney function reported by Sato et al. [1].

Among the various types of animal-derived calcitonin preparations which have been used to treat renal osteodystrophy, ipriflavone is distinctive in that it can increase physiological calcitonin within the human body. Calcitonin levels in our patients were considerably higher than those in patients with the normally functioning kidneys reported by Sato et al. [1], suggesting that the effect of ipriflavone on calcitonin may be slightly different in dialysis patients than in persons with normal kidney function.

The data obtained in the present study, together with the fact that there was not even a single instance of adverse effects, indicate that ipriflavone has the potential to be effectively used in the treatment of renal osteodystrophy. Further studies will be performed on this subject.

Reference

1 Sato T, Koike T, Hamada A, et al: Pharmacokinetic study of ipriflavone (TC-80) by long-term oral administration in osteoporotic patients. *Basic Pharmacol Ther* 1986;14:873–883.