increased the expression of Phospho-AKT-Ser473. LICI, which can promote the expression of the Phospho-GSK-Ser9, was used as a positive control. Mouse embryonic fibroblasts cell line 3T3-L1 was maintained in DMEM supplemented with LY294002, LICI, Icatitin and LY294002+Icatitin. After 60min training, the cell lysates were prepared in lysis buffer for Western blot analysis.

Results: Oil Red O staining showed that there were seldom lipid vesicles in the Icatitin groups. The expression of well-known adipose differentiation-related genes (PPARγ/C/EBP-α/ap2/LPL) were down-regulated by the addition of Icatitin. The Icatitin group increased the level of Phospho-AKT-Ser473 significantly, while the inhibitor of PI3K, LY294002, almost completely suppressed the expression of Phospho-AKT-Ser473, not only in the absence but also in the presence of Icatitin. Icatitin slightly improved the level of Phospho-GSK-Ser9, and such improvement was inhibited by LY294002, as the secretion of Phospho-GSK-Ser9 had been reduced in the LY294002+Icatitin group. Meanwhile, Icatitin up-regulated the level of β-catenin, which could activate the osteogenesis-related genes, and LY294002 also had a considerable inhibitory effect on the expression of β-catenin.

Conclusion: In 3T3-L1 fibroblasts, Icatitin affects adipocyte differentiation and protects postmenopausal osteoporosis via the AKT/GSK-3β/β-catenin signaling pathway.

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DISCORDANCE IN DIAGNOSIS OF OSTEOPOROSIS USING SPINE AND HIP T-SCORE, AND ITS PREDICTORS
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Background: Discordance between t-value at hip and lumbar spine has been observed in many patients. Therefore, in most countries, bone mineral density (BMD) is recommended to be assessed at both hip and spine for osteoporosis diagnosis. However, the Dual-energy X-ray absorptiometry (DXA) scan at both sites will cause more exposure to radiation and higher financial cost. And some researches implied that the high occurrence of discordance might be due to some defects in the cut-off values for definition of osteoporosis.

Objective: The study aims to evaluate the presence of t-score discordance between spine and hip among Hong Kong population, and to determine predictors for the discordance.

Methods: The data was from MROs and MsOs, which was a cohort study established by JCOC. They recruited 2000 females and 2000 males aged 65 and above, and MROs data was from 2001 to 2003 as well as MsOs data from 2002 to 2003. DXA was performed at the hip and spine for all subjects, obtaining BMD for total hip, femoral neck, lumbar spine and trochanter etc. The participants were also interviewed for their demographics, socioeconomic status, medical history and lifestyle.

Results: The study showed that around 60% of osteoporotic female and a little over 75% of the osteoporotic male had inconsistency between diagnosed osteoporosis based on t-score at spinal and hip sites. The diagnosis discordance falls into two categories: major and minor, based on World Health Organization (WHO) classification system. In the total 4000 participants (mean age: 72.480 ± 5.164yr), major discordance, minor discordance and no discordance were diagnosed in 2.04%, 38.11% and 59.85% of subjects, respectively. Patients with t-score discordance were more likely to have lower BMD or t-score at 2.04%, 38.11% and 59.85% of subjects, respectively. Patients with t-discordance, minor discordance and no discordance were diagnosed in 2.04%, 38.11% and 59.85% of subjects, respectively. Patients with t-discordance, minor discordance and no discordance were diagnosed in 2.04%, 38.11% and 59.85% of subjects, respectively.

Conclusion: As the occurrence of discordance is high, it would not be suitable to predict the t-score of one site based on the t-score at another site. The study helps physicians to predict discordance on the basis of patients’ demographics and medical history.

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INDUCED ELECTRICAL POTENTIALS IN BONE BY ULTRASOUND IRRADIATION
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Objective: A lot of low frequency mechanical studies have reported the stress-induced electrical potentials in bone. Fukada and Yasuda considered that this potential is the basic link in clinically observed adaptive response in bone. In order to check the existence of the stress induced electrical potentials in the MHz range, we have experimentally studied the electrical response of bone under the ultrasound irradiation.

Methods: We have fabricated ultrasound transducers using bovine cortical bone plate specimens (thickness 0.5 or 1.0 mm, diameter 10.0 mm) as sensing devices. They were extracted from the anterior or posterior parts of the mid-femoral shafts. By comparing with a conventional poly (vinylidene fluoride) (PVDF) transducer (diameter 10.0 mm), the electrical responses of the bone transducers were investigated using an immersion technique. A PVDF focus transducer (diameter 20mm, focal length 40mm, custom made by Toray) was used as a transmitter of a burst ultrasound wave with 10 to 20 sinusoidal cycles in the MHz range. The ultrasound was received by the PVDF or bone transducers. At the surface of the receivers, the ultrasound pressure was kept at 10 kPa-p.

Results: The amplitudes of the received waves by the PVDF transducers were around 100 microVp-p, whereas that by the PVDF transducer was 80 mVp-p. They were not dependent on the amount of the hydroxyapatite (HA) oriented normal to the bone plate specimen surface. Considering the capacitances of the bone and PVDF transducers, the electrical potentials in bone was roughly estimated to be 1% of the PVDF transducer. The frequency characteristics of the bone transducer sensitivities showed weak fundamental resonance peaks at 1 MHz (bone plate thickness 1.0 mm) or 2 MHz (thickness 0.5 mm). They were in good agreement with the ultrasound propagation speed (3600-4400 m/s). The response of the bone transducers changed during the long immersion time more than 100 min, reflecting the effects of water absorption. The absorption resulted in the small expansion of the volume and the frequency shift of resonance peaks.

Conclusion: In summary, the ultrasonically induced electrical potentials in bone were experimentally confirmed in the MHz range. The potential was observed in the wet bone transducers. This indicates that the electrical potential can be generated in vivo by the ultrasound irradiation.

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THE EFFECT OF L-CARNITINE AND EXERCISE ON PPARα AND H-FABP IN MYOCARDIUM OF OBSESE MICE
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Objective: To study the effect of applying exogenous L-Carnitine (LC) and training on serum lipids and expression level of peroxisome proliferator-activated receptor α (PPARα)and heart fatty acid binding protein (H-FABP) in myocardium; to investigate the mechanism of exercise combined with exogenous LC on myocardial lipid.

Methods: 36 nutrition obese mice were divided into 4 groups (OC, OE, OL, OEL), n=9 per group. OC and OE were given five-week non-weight-bearing swimming training (5 times/week, 60min/times); OEL and OL were fed with rat food containing L-C at 1 hour before swimming training. After the last experiment, fasted for 24 hours, TG, TC, HDL-C, LDL-C in blood serum and FFA, L-C, H-FABP, PPARα in myocardium were examined. They were then analyzed by two-factor analysis of variance using statistical software JMP10.0.

Results: After five weeks of experiments, the body weight, TC and TG of OC and OEL were significantly lower than the OC group (P < 0.05). Interestingly, there was no difference in the content of HDL-C and LDL-C among four groups (P > 0.05). LC in myocardium of OEL and OL groups were higher than the OC (P <0.05). By comparing OE and OEL with OC, the latter’s FFA in myocardial was much higher (P < 0.01). Protein expression of PPARα, H-FABP in OE and OEL were considerably higher than the counterpart in OC (P <0.01). Meanwhile, PPARα protein expression in OC was dramatically increased (P <0.05).