Methods: (ASPB): Liposome-icaritin was synthesized by thin film evaporation method with extruding through polycarbonate filter membranes to obtain unilamellar vesicles with bone targeting molecules ASP8 attached. Eighty four-month-old C57/BL6 female mice were divided into 8 groups (n = 10): Baseline (BL), Sham surgery (SH), Ovariectomized (Ovx), Estradiol for oral administration(O-E2), Icaritin for oral administration (O-Ict), low dose (8mg/kg, once a week) targeting delivery system with Icaritin injected via caudal vein (IV-LiP-Ict+ASPB-L), high dose (8mg/kg, twice a week) targeting delivery system with Icaritin injected via caudal vein (IV-LiP-Ict+ASPB-H), delivery system with Icaritin injected via caudal vein (IV-Lip-Ict, 8mg/kg, twice a week). Administrations of gavage and IV injection were applied respectively for 6 weeks from the day right after the OvX surgery. Lumbar spine and lower limbs were harvest 6 weeks after surgery for bone quality analysis. The 5th vertebra body of lumbar region was scanned by micro-CT (Scanco micro-CT 40). Trabecular bone was identified and parameters were analyzed for evaluation of bone quality and microarchitecture. For confirming the specificity of the targeting delivery system, Xenogen IVIS spectrum was used to semi-qualify the distribution of bone targeting system without bone targeting molecules ASP8 shown in IVIS image.

Conclusion: The novel bone-targeting delivery system carrying osteopromotive phytomolecule(s) Icaritin was confirmed that was capable of preventing estrogen depletion induced osteoporosis in a dose dependent manner.

Objective: Two adjustment models were applied to a dataset of bone-mineral density (BMD) and bone-mineral content (BMC) from dual-energy x-ray absorptiometry (DXA) measurements of pediatric patients with Prader-Willi Syndrome (PWS). One model used weight, height and % body fat (WHF) in the calculation of Z-scores in addition to race, sex and age already included in the standard model. As percent body fat is not always available, a second model with only weight, height and % body fat (WHF) in the standard model. As percent body fat is not always available, a second model with only weight, height and % body fat (WHF) was also examined (WH).

Methods: Fifty-six patients with PWS, a neurogenetic disorder caused by the absence of paternal expression of imprinted genes localized in the 15q11-q13, were recruited. PWS is characterized by an insatiable appetite leading to obesity, short stature, cognitive and behavioral problems, hypogonadism and osteoporosis. All patients had spine and hip DXA measurements; 31/56 also had whole-body measurements (needed for body-fat correction). Several patients show lower than normal height or higher than normal weight for age. The percent body fat for all patients is either above the upper limit of or above the normal range. Patients with extreme anthropometric values were most affected by the anthropometrically corrected Z-scores.

Results: The age range of case-control groups was 68-88 years old. There were no statistically significant differences between two groups in age, sex and occupation (p > 0.05). The variables with statistically significant differences in the univariate analysis were included in Logistic Regression model. After adjustment for the education, ethnic factors, health status during childhood, behavioral habits, history of bone disease and medicine use, the findings showed that the exposure factors, such as indoor air conditions during the winter heating, weekly exercise, sleep quality, consumption of carbonated beverages, were associated with risk of elderly fracture. When compared to elderly population who had good air quality of habitable room in winter, elderly population with poor air quality had an elevated risk for fracture (OR 4.0, 95% CI 1.75-9.28); elderly population who had no weekly exercises had an increased risk for fracture (OR 4.28, 95% CI 1.20-15.24) when compared to those who had weekly exercises; elderly persons with poor quality of sleep was associated with a 6.5-fold increase in risk of fracture when compared to those with better quality of sleep (95% CI 1.61-29.14).

Conclusion: The findings suggest that poor indoor air quality during the winter heating may be the risk factors of osteoporotic fractures for the elderly population. It is necessary to further investigate those factors in a larger sample population.

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**EFFECT OF ANTHROPOMETRIC ADJUSTMENTS ON BMD AND BMC Z-SCORES IN A POPULATION OF PRADER-WILLI SYNDROME PEDIATRIC PATIENTS**

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**FRACTURE RISK OF ELDERLY POPULATION: LIKELIHOOD OF OSTEOPOROTIC FRACTURE RISK IN ELDERLY POPULATION AND INDOOR AIR POLLUTION**

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