

**Does the Adjunctive Traditional Chinese Medicine Use Reduce the Need for Surgery in Patients with Osteoarthritis? –A Nationwide Population-Based Study in Taiwan**

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**Objective**

Osteoarthritis (OA) is a common illness in the aged population. However, large-scale study of traditional Chinese medicine (TCM) use among patients with osteoarthritis (OA) is lacking. The aim of this study is to investigate the TCM use among OA patients in Taiwan.

**Materials and Methods**

This study analyzed datasets from the National Health Insurance Research Database in Taiwan. Patients (n=97,769) newly diagnosed as OA between January 2000 and December 2010 were included in this study. Patients who had at least one TCM outpatient clinical record after OA diagnosis were defined as TCM users (n=5,182), whereas those without TCM outpatient records were defined as non-TCM users (n=95,287). The demographic data, treatment modalities, disease distributions, comorbidities, prescription pattern and the need for total knee replacement surgery of the TCM users were analyzed.

**Results**

TCM users tended to be younger, female, and live in highly urbanized area. The average interval between OA onset and the first TCM clinical visit was 9.63 months. Herbal remedies were the most commonly used therapeutic approach (75.7%), followed by combined herbal remedies and acupuncture (21.1%), and acupuncture or traumatology alone (3.2%). The most commonly prescribed formulas were Gui-Lu-Er-Xian-Jiao, Du-Huo-Ji-Sheng-Tang and Dang-Gui-Nian-Tong-Tang, whereas Cortex Eucommiae, Radix Salviae Miltiorrhizae and Rhizoma Corydalis were the three most frequently prescribed single herbs. Patients who had adjunctive TCM use has no decreased need for total knee replacement surgery (adjusted hazard ratio 1.11(0.99, 1.24)).

**Conclusion**

Adjunctive TCM use didn't reduce the need for total knee replacement in patients with OA. Other outcome improvement such as quality of life should be considered. These results also provided valuable information for further pharmacologic investigation and clinical studies on the treatment of OA.

**Keywords:** National Health Insurance Database; Osteoarthritis; Traditional Chinese medicine

Table. Incidence rate ratio and adjusted hazard ratio of Total Knee Replacement in Osteoarthritis between groups with and without TCM

		TCM						
		No N=54319			Yes N=2672			
Variables	Event	Rate <sup>#</sup>	Crude HR* (95 % CI)	Adjusted HR <sup>†</sup> (95 % CI)	Event	Rate <sup>#</sup>	Crude HR* (95 % CI)	Ag HR
Total Knee Replacement	5323	15.3	1(Reference)	1(Reference)	313	16.3	1.0 (0.95, 1.19)	1.1 1.2

Rate<sup>#</sup>, incidence rate, per 1000 person-years; Crude HR\*, relative hazard ratio;  
Adjusted HR<sup>†</sup>: multiple analysis including age, gender, urbanization and co-morbidities of diabetes, hypertension, hyperlipidemia, CAD, COPD, stroke and osteoporosis; \*p<0.05

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**Novel Concepts to Develop an “All-in-One” Functional Food for Health and Disease Prevention in the 21<sup>st</sup> Century by Biomarkers Technology**

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Metabolic syndrome (obesity), cancers and aging are the major health problems and diseases in the 21<sup>st</sup> century. Some diets or natural products are not only “nutrients”, but also contain active ingredients which can exhibit biological functions in health and medicine by receptor interaction and epigenetic regulation. Agonists of peroxisome proliferator activated receptors (PPARs) and the machinery family of PPAR/RXR and RXR/LXR have been found to play an orchestrated regulation and improve the progression of diabetes, cancer and aging. The aim of this study is to develop a new generation functional food which can prevent and improve metabolic syndrome, cancer and aging by targeting this PPAR/RXR/LXR machinery and candidate molecules such as NF- $\kappa$ B, mTOR and ApoE were also tested. First, we established the platform to screen natural products with PPARs activity. Five natural products with PPAR activity were selected and identified their biological function by detection of p-mTOR and ApoE expression. Then, an optimal combination and formulation of product was performed. A combined extracts of these natural products rich in ligands for PPAR/RXR/LXR were further confirmed their effects on the improvement of metabolic syndrome, aging and anti-cancer in animal model. After validating for safety and efficacy, it can apply for health food certificate and marketing. By this approach, we have developed an “all-in-one” product 3DRC<sup>®</sup> for this purpose.