

The Availability of Beneficial Insects-originated Materials on Women's Health following Menopause

Sun Shin Yi¹, Ji Ae Song¹, Hyekyung Baek¹, Eunmi Hwang², Tae-Hee Kim³, Hye-Hyeog Lee³, Hyun Sik Jun⁴, Sung-Jo Kim²

¹Department of Biomedical Laboratory Science, College of Biomedical Science, Soonchunhyang University, Asan, ²Department of Biotechnology, Hoseo University, Asan, ³Department of Obstetrics and Gynecology, Soonchunhyang University, College of Medicine, Bucheon, ⁴Department of Biotechnology and Bioinformatics, College of Science and Technology, Korea University, Sejong, Korea

Human health problems due to long life are becoming major issues in society, and in particular greater interest collected on women's health after menopause. Many substances can be introduced to women's health, however, materials from the substances have not shown all of the safety and efficacy properties that are not easily found. Currently, it is known about the effects of the disease on the female insect-derived material that is capable of overcoming this problem significantly. When using the insect-derived material through the results of several studies suggest that it is possible to solve a hormonal imbalance and nutritional imbalance in the elderly. Here, we'd like to try to dissertate about the new trends for women's health improvement using novel materials-derived from insects. (**J Menopausal Med 2015;21:126-129**)

Key Words: Hormones, Menopause, Nutritional status, Women's health

Introduction

For decades, there are many interests and research focused on women's health according to increasing of female's life span. In particular, female patients who have problems such as menopause, hormonal and nutritional imbalance are continuously have risen as main health issues in women's health.¹⁻⁸ There have reported that women are suffering from the diseases after menopause by hormonal imbalance such as osteoporosis, obesity, diabetes, breast cancer, depression and dementia,⁹⁻¹¹ in addition, many senior ladies have been reported as mal-nutritional state

depending on the elderly or lifestyles.^{12,13}

The new approaches using new types of insects-derived materials against chronic senior ladies' disease following menopause have been tried to attenuate such a various problems for a recent decade, which is the use of a variety of medicinal and nutritional benefits from insect-derived materials.¹⁴⁻¹⁶ Historically, it has been a very long time for insects to be both used as a food and an alternative medicine in many Asian countries,^{17,18} however, scientific evaluation has not been well conducted yet on the medicinal and nutritional values for them.

Various peptides, extracts and compounds isolated from

Received: September 20, 2015 Revised: October 13, 2015 Accepted: November 9, 2015

Address for Correspondence: Hyun Sik Jun, Department of Biotechnology and Bioinformatics, College of Science and Technology, Korea University, 2511, Sejong-ro, Jochiwon-eup 30019, Korea
 Tel: +82-44-860-1411, Fax: +82-44-860-1598, E-mail: toddjun@korea.ac.kr

Co-correspondence: Sung-Jo Kim, Department of Biotechnology, Hoseo University, 20, Hoyo-ro 79 beon-gil, Baebang-eup, Asan-si 31499, Korea

Tel: +82-41-540-5571, Fax: +82-41-540-9538, E-mail: sungjo@hoseo.edu

Hyun Sik Jun and Sung-Jo Kim contributed equally to this work and should be considered co-corresponding authors.

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insects have reported that have epithelial proliferation and inflammatory response, and have been expected to have anti-metabolic diseases.^{19–21}

Here, in this short review, it will be examined whether insect-derived materials can be a new promising agent for positively attenuation various health problem issues following menopause compared to a number of conventional agents.

Samia Cynthia Ricini

Samia Cynthia ricini (Family Saturniidae) has been introduced as Chinese material medical in Zhong-hua-ben-cao (State Administration of Traditional Chinese Medicine of People's Republic of China, 1999).²² Gan et al.,¹⁵, reported that treatment of the ethanol extraction from female moths *Samia Cynthia ricini* for 4 weeks showed increased keratinization of aged mice's vagina epithelia, the weight of the ovary and amelioration of its degenerative process. Also, it showed increased serum concentration of estradiol, progesterone concentration and bone mineral contents. Since the declined estradiol and progesterone production disrupt the negative feedback of hypothalamic-pituitary-ovarian axis,^{15,23,24} moreover, if the constant hormone levels are not well maintained, and fertility is affected also stress regulatory mechanisms of the body as well. In particular, *Samia Cynthia ricini* has accelerating effect on estrogen on vaginal epithelial keratinization in rodent with no adverse effect.¹⁵ In this respect, *Samia Cynthia ricini* can be a good candidate material for women following menopause.

Tenebrio Molitor Linnaeus

Mealworms are the larvae of two species of darkling beetles of the Tenebrionidae family, the yellow mealworm beetle (*Tenebrio molitor Linnaeus*), and the smaller and less common dark or mini mealworm beetle (*Tenebrio obscurus Fabricius*).²⁵ Mealworm beetles are indigenous to Europe and are now distributed worldwide. Mealworms are easy to breed and feed, and have a valuable protein profile.¹⁶ Mealworms are a high quality feed. They contain large amounts of protein (45%–60% dry matter [DM]) and lipid

(30%–45% DM). Fresh larvae contain about 60% water. They are relatively poor in ash (less than 5% DM), and like other insects they have a low calcium content and a very low calcium:phosphorus (Ca:P) ratio. The exclusive feeding of mealworms caused Ca²⁺ deficiency and symptomatic metabolic bone disease.¹⁶ It must be noted that composition is highly variable and influenced by the diet. Notably, the calcium content can be manipulated using calcium-fortified diets. Thus, they performed an experiment increasing the calcium content of mealworms (*Tenebrio molitor*) to improve their nutritional value for bone mineralization of growing chicks.¹¹ Several dried waste materials from different origins were used as a substrate to grow *Tenebrio molitor* L. Nutrient/amino acid values differed depending on both larval size/weight and substrate. In addition, these larvae were experimentally used as a broiler feedstuff. Afterwards, Ramos-Elorduy et al.²⁵, also reported the nutritional value of *Tenebrio molitor* that has the potential to be used as protein source for raising broilers. Currently, mealworms are edible for humans. Baked or fried mealworms are marketed as a healthful snack food. They may be easily reared on fresh oats, wheat bran or grain, with sliced potato, carrots, or apple as a moisture source. It might be expected to be a good source for anti-osteoporotic property and anti-malnutrition for elderly women.

Apis Mellifera

Honeybee (*Apis mellifera*) royal jelly (RJ) has a long history in human medicine because of its health-protecting effects. RJ contains rich proteins, carbohydrates, fats, free amino acids, vitamins and minerals.²⁶ In particular, lipids in RJ are useful as preventive and supportive medicines with functionalities that include potential inhibitors of cancer growth, immune system modulators, alternative therapies for menopause, skin-aging protectors, neurogenesis inducers.²⁶ Park et al.²⁶, also reported that RJ, in particular, caffeic acid phenethyl ester (CAPE) from Honeybee propolis has been known to have capacity of attenuating osteoclastogenesis and bone resorption in ovariectomized (OVX) mice.²⁷ According to the results, with CAPE treatment, the microarchitecture of the tibia metaphysis was

significantly enhanced with a reduction of osteoclast formation as well bone mineral density (BMD). Thus, CAPE is expected to be applied to the treatment of osteolytic condition including osteoporosis, arthritis, periodontal bone erosions and cancers-induced bone loss.²⁷

As noted above, there have expected many kinds of insects are able to use for human health. However, still little thing is known their safe unique and alternative medicinal function when they used with food type. In general, since edible insects have very low toxicity, the use as alternative medicines or foods has been paid attention to especially women's health. This is definitely potential and new area for many health problem issues to elderly women who is following menopause by chemical- or hormonal-based medicinal treatments.

Acknowledgements

This work was carried out with the support of “Cooperative Research Program for Agriculture Science & Technology Development (Project No. PJ01104602)” Rural Development Administration, Republic of Korea.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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