



An Emerging Complimentary Medicine-Yolk Oil Made from Heating Method

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Abstract

Yolk oil is common in Asia. According to the Flora Sinensis, yolk oil is a multipurpose medicine, with specific dermatological and fever indications. Nowadays, it is generally used as a complimentary medicine for heart diseases. Yolk oil can be made from heating or chemical extraction method. It is generally believed that yolk oil made from heating (YOheat) method is more effective as a medicine than that from extraction (YOext). The technical details of the heating method remain an issue of argument, including the degree of char and the threat of carcinogens formed during the heating process. Most yolk oil related studies used YOext as research material. Nevertheless, animal studies have showed that YOheat reduced triglycerides and total cholesterol in rodent liver. It is expected an easy-to-make complimentary medicine like YOheat may become even more common and thus evidence based studies should be conducted to verify its pharmacological effects and safety.

Key words: Egg, Yolk oil, Heart diseases, Drug safety

Introduction

Hen eggs are common food widely acceptable by people around the world, either rich or poor. Not only treated as a main dish and used as an ingredient in cooking and bakery, hen eggs can be made into yolk oil (generically known as 蛋油 dàn yóu, 卵油 luǎn yóu, 卵精 luǎn jīng, 蛋黃油 dàn huáng yóu or 雞子油 jī zǐ yóu). Yolk oil is popular in Japan and Korea, and among Chinese people (including Chinese people from the Mainland China, Taiwan, Hong Kong, Malaysia, etc). In Japan, yolk oil products with trademark can be purchased over the counter from pharmacies or cosmeceutical stores. In Taiwan and China, most of

these products can be purchased from homemade market or traditional Chinese herbal shops, mostly without a brand. Yolk oil is described in the well known Chinese medical encyclopedia Flora Sinensis (本草綱目 běn cǎo gāng mù) as a remedy for every diseases, with specific indications in skin sore and ulcer on head and mild fever with diarrhea in children (Boym, 1956). Nowadays, yolk oil is widely used as a complimentary medicine for treating or preventing heart diseases, especially in Japan

Manufacture, Effects and Risks

Current methods for obtaining yolk oil include heating and chemical extraction, or a combination of

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both. It is generally believed among yolk oil users and Chinese medicine practitioners that yolk oil made from heating (YOheat) method, mostly by using the traditionally wok, is more effective than yolk oil made from laboratory based chemical extraction (YOext). The yolk is dried in oven or on the wok, and then continuously heated and fried without cooking oil, until yellowish or slightly charred yolk oil effuses. The oil is then collected and stored for further use. Also, it is generally thought that charred yolk oil (CYO) is more effective than the yellowish yolk oil as a medicine. However, whether yolk oil should be extracted at yellowish or charred state, remains an argument. The opponents argue that CYO may contain carcinogens and thus the threat of cancers cannot be ignored, while the supporters claim that the toxicity of carcinogens is equalized by other “good” components of the oil, or the black materials in the oil are harmless something else. Indeed, Kato et al (1990) detected at least 7 heterocyclic amine mutagens in CYO branded samples. The worrying part of CYO is that heating method can simply be done in kitchen, and drug safety issues may not be taken into account in the heating process. An improvement of the heating method for avoiding the formation of heterocyclic amines is warranted.

Evidences for Applications

Lipids are the main components in egg yolk, including triglycerides (65%), phospholipids (29%, out of which 86% are phosphatidylcholine and 14% phosphatidylethanolamine), cholesterol (5%), and free fatty acids (< 1%). (Anton and Gandemer, 1997). There have been very few literatures attempting to analyze the compositions of YOheat, and thus it is unclear which components are potentially effective to human health and diseases. Theoretically, the effective compounds include new compounds formed from the lipids after heating.

Most yolk oil related studies used YOext as research material. Only a very small number of publically available modern scientific literatures have reported the effects of YOheat in human health and diseases. Among these, Lin et al reported the effects of YOheat in reducing lipid levels using rodent models (Lin et al, 2004a; Lin et al, 2004b). The three experimental groups in the hamster model were fed with 2% acidic fraction oil, 4% of acidic fraction oil and 2% of neutral fraction oil in their basal diets for 6 weeks, respectively, while the two experimental groups in the rat model were fed with 2% and 4% of yolk oil in their basal diets for 7

weeks, respectively. The authors showed that YOheat reduced liver total cholesterol in rats (Lin et al, 2004a) and triglycerides in hamsters (Lin et al, 2004b). A YOext, AL721, has been reported to reverse the brain membrane hyperviscosity and, concomitantly, markedly reduce, or even completely abolish the withdrawal symptoms precipitated by naloxone in morphine-addicted mice (Heron et al, 1982). The compound has been shown to reduce HTLV-III infectivity in human peripheral-blood lymphocytes (Salin et al, 1985). A study design comparing the effects of YOheat and YOext in cellular and animal models may reveal essential information on the usefulness of the yolk oil.

Future Perspectives and Conclusion

Because heart diseases have become common diseases around the world, it is expected that an easy-to-make complimentary medicine like yolk oil may become even more common in the next few decades. Although generic information on YOheat can be obtained from commercialized companies (e.g., <http://www.tezukuri-ranyu.jp/>) or books published by user groups (Nomoto, 1989), there is an obvious need to verify the treatment effects, production methods and guidelines and safety of YOheat by evidence based studies.

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