

[Available Issues](#) | [Instructions to Authors](#) | [Japanese](#) >> [Publisher Site](#)

Author:  [ADVANCED](#) | Volume  Page   
 Keyword:   |



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1349-0486

PRINT ISSN : 1346-7395

The Journal of Poultry Science

Vol. 46 (2009) , No. 2 pp.149-154

[\[PDF \(381K\)\]](#) [\[References\]](#)

## ***In vitro* Effects of Methanol Extracts of Korean Medicinal Fruits (Persimmon, Raspberry, Tomato) on Chicken Lymphocytes, Macrophages, and Tumor Cells**

[Sung-Hyen Lee](#)<sup>1)2)</sup>, [Hyun S. Lillehoj](#)<sup>1)</sup>, [Hye-Kyung Chun](#)<sup>2)</sup>, [Hong-Ju Park](#)<sup>2)</sup>, [Soo-Muk Cho](#)<sup>2)</sup> and [Erik P. Lillehoj](#)<sup>3)</sup>

1) Animal and Natural Resources Institute, Beltsville Agricultural Research Center, Agricultural Research Service, United States Department of Agriculture, USA

2) Department of Korean Food Research for Globalization, National Academy of Agricultural Science, Rural Development Administration, South Korea

3) Department of Pediatrics University of Maryland School of Medicine, USA

(Received: July 28, 2008)

(Accepted for publication: November 21, 2008)

A variety of fruits have traditionally been used in Asian cultures to enhance resistance to diseases and treat cancers. However, limited information exists on the underlying mechanisms responsible for these effects. The present investigation was conducted to examine the ability of three Korean indigenous fruits (persimmon, raspberry and tomato) to stimulate lymphocyte proliferation and macrophage nitric oxide production as parameters of innate immunity, and to inhibit tumor cell growth. *In vitro* co-culture of chicken spleen lymphocytes with methanol extracts of persimmon (*Diospyros kaki*) or tomato (*Lycopersicon esculentum*) induced greater cell proliferation compared with cells treated with the vehicle control. Stimulation of chicken macrophages with extracts of persimmon or raspberry (*Rubus crataegifolius*), but not tomato, stimulated robust nitric oxide production to levels similar to that produced by interferon- $\gamma$ . All fruit extracts uniformly inhibited the growth chicken tumor cells *in vitro*. These results provide a rational basis for future studies investigating the effects of medicinal fruits on innate immunity and carcinogenesis in humans and animals.

**Keywords:** [fruit](#), [immunomodulation](#), [macrophage](#), [splenocyte](#), [tumor](#)

[\[PDF \(381K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

Sung-Hyen Lee, Hyun S. Lillehoj, Hye-Kyung Chun, Hong-Ju Park, Soo-Muk Cho and Erik P. Lillehoj “*In vitro* Effects of Methanol Extracts of Korean Medicinal Fruits (Persimmon, Raspberry, Tomato) on Chicken Lymphocytes, Macrophages, and Tumor Cells” J. Poult. Sci., Vol. 46: 149-154. (2009) .

---

doi:10.2141/jpsa.46.149

JOI JST.JSTAGE/jpsa/46.149

*Copyright (c) 2009 by Japan Poultry Science Association*

---



---

[Japan Science and Technology Information Aggregator, Electronic](#)

