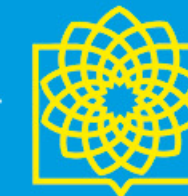




ISSN:1735-0328



A Quarterly Publication of the School of Pharmacy  
Shaheed Beheshti University of Medical Sciences

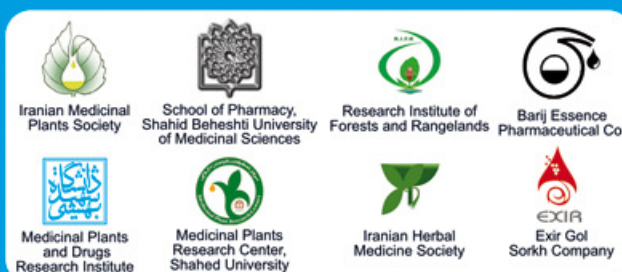
Proceedings of  
National Congress of Medicinal Plants  
16, 17 May 2012, Kish Island

Iranian Journal of Pharmaceutical Research

Volume 11, Number 2, 2012, Supplement 1

# Iranian Journal of Pharmaceutical Research

Iranian  
Journal of  
Pharmaceutical  
Research



Volume 11, Number 2, 2012, Supplement 1



شبکه ملی پژوهش و فناوری  
گیاهان دارویی

# کنگره ملی گیاهان دارویی

۲۷ و ۲۸ اردیبهشت ۱۳۹۱ - جزیره کیش

National Congress on Medicinal Plants



به نام خدا

گواهی می شود <sup>سرکار خانم</sup> امید صفری  
جناب آقای

در کنگره ملی گیاهان دارویی که در روزهای ۲۷ و ۲۸ اردیبهشت ماه سال ۱۳۹۱ در

مرکز همایش های بین المللی جزیره ی کیش برگزار گردید، شرکت نموده و مقاله خود را تحت عنوان

**STUDY ON THE EFFECT OF USING DIFFERENT LEVELS OF HARMEL SEEDS  
(PEGANUM HARMALA) ON SOME BIOLOGICAL INDICES OF RAINBOW TROUT  
ONCORHYNCHUS MYKISS**

به صورت پوستر ارائه نمودند.

دکتر فراز مجاب  
دبیر اجرایی کنگره

دکتر پیمان صالحی  
دبیر علمی کنگره





## STUDY ON THE EFFECT OF USING DIFFERENT LEVELS OF HARMEL SEEDS (PEGANUM HARMALA) ON SOME BIOLOGICAL INDICES OF RAINBOW TROUT (ONCORHYNCHUS MYKISS)

Omid Safari,<sup>1,\*</sup> Masoomeh Mehraban Sang Atash,<sup>2</sup> Mehrdad Farhangi<sup>3</sup>

<sup>1</sup> *Faculty of Natural Resources and Environment, Ferdowsi University of Mashhad, Mashhad, Iran*

<sup>2</sup> *Food Science and Technology Research Institute, ACECR, Mashhad Branch, Mashhad, Iran*

<sup>3</sup> *Faculty of Natural Resources, University of Tehran, Karaj, Iran*

*E-mail: omidsafari@ferdowsi.um.ac.ir*

One of purposes of using medicinal plants in the diet of animals is to improve growth indices and identify growth promoters for organic aquaculture practices. Harmel is a plant having antiinflammatory and anticancer agents. Harmal seeds was used at five inclusion levels (100, 200, 300, 400 and 500 ppm) together with control diet in the isonitrogenous and isoenergetic diets of juvenile rainbow trout ( $3.1 \pm 0.5$  g) for 56 days. Growth performance (specific growth rate) and immunological indices (lysozyme and complement) were measured. Results showed that using more than 300 ppm harmal seed decreased the final weight ( $8.11 \pm 0.5$  g) compared to control group ( $10.42 \pm 0.8$  g). Specific growth rate fish fed the diets containing 400 ppm (2.8%/day) and 500 ppm (2.4%/day) of harmal seed decreased significantly ( $P \leq 0.05$ ) compared to control diet (4.1%). Immunological indices including lysozyme and complement levels of the serum of fish fed the diet containing 400 ppm harmal increased ( $8.2 \mu\text{g/ml}$  and  $10.1 \text{ unit/ml}$ , respectively) compared to control diet ( $6.2 \mu\text{g/ml}$  and  $8.0 \text{ unit/ml}$ , respectively). Based on the results, using harmal seed at 300 ppm in the diet of rainbow trout was possible. Knowing nutraceutical and functional properties of native plants is an important area in fish nutrition in near future [1].

[1] Massaro, Edward J. (2002). *Handbook of Neurotoxicology*. Humana Press. p. 237.