THE PROTECTIVE EFFECT OF LEMON GRASS AND ITS OIL ON HEPATOTOXICITY IN RATS CAUSED BY CCl₄

BY

EMAN EL-SAYED MAHMOUD EL-SERWY

Nutrition and Food Science Department,
Faculty of Home Economics, Helwan University.

ABSTRACT

The present work was conducted to study the effect of lemon grass and its oil on the nutritional value, percent of organs weight/body weight, lipid parameters, glucose, iron status, kidney and liver functions of rats suffering from hepatotoxicity caused by CCl₄. Six experimental groups (n = 6 for each group) were established. Groups (1 and 2) were fed on basal diets (used as a negative and positive control groups, respectively). Groups (3-4) received basal diets containing two levels of lemon grass (2.5 and 5g lemon grass/100g diet, respectively). Groups (5-6) received basal diets containing two levels of lemon grass oil (2.5 and 5g lemon grass/100g diet, respectively). Before 2 days from the end of the experiment period (28 days), all treated and positive control groups were injected with CCl₄, in paraffin oil (20% at dose 5 ml/kg) subcutaneous injection to induced hepatotoxicity in rats. Addition of lemon grass or its oil to the diets improved the nutritional value, in addition to the percent organs weight/body weight. The mean values of serum cholesterol, triglycerides, low-density lipoprotein cholesterol (LDL-c), very low-density lipoprotein (VLDL-c), uric acid, urea nitrogen, creatinine, glucose, aspartate amino transferase (AST) and alanine amino transferase (ALT) decreased in all treated groups with lemon grass or its oil, as compared to the positive control groups, while high-density lipoprotein (HDL-c) increased. Histopathological examination of liver in group treated with CCl₄ revealed degenerative and necrotic changes, however, treated groups with lemon grass or its oil showed marked amelioration of the severity of these changes. It was concluded that high level of lemon grass or its oil (5g/100g diet) realized the best effect on lipid profile, kidney and liver functions, glucose level and iron status.

Key words: lemon grass, lemon grass oil, CCl₄, hepatotoxicity, rats, lipid profile, kidney functions, liver enzymes.

Published In:
The New Egyptian Journal of Medicine Vol.:44; No.: 3 Supplement 1st March 2011, Pp58-68

REFERENCES:


Maizura, M.; Aminah, A. and Wan Aida, W. M. (2011): Total phenolic content and antioxidant activity of kesum (Polygonum minus), ginger (Zingiber officinale) and turmeric (Curcuma longa) extract. *International Food Research Journal* 18: 529-534


2- Influence of Sage (*Salvia Officinalis* L.) and Purslane (*Portulaca Oleracea* L.) on Weight Reduction and Some Biochemical Parameters in Rats Suffering from Obesity

BY

Eman, El-Sayed. M. El-Serwy¹ and Mohamed, Y. Abd El-Hameid ²

¹Nutrition and Food Science Dept., Faculty of Home Economics, Helwan University.
Cairo-Egypt
SERWYS@YAHOO.COM

²Home Economics Dept., Faculty of Education, Suez Canal University.
Cairo-Egypt.

ABSTRACT

The present work was conducted to study the effect of Sage (*Salvia officinalis* L.) and Purslane (*Portulaca Oleracea* L.) on the nutritional parameters (including feed intake and body weight gain %), lipid parameters, glucose, liver enzymes and some hormones (total thyroxin T₄, triiodothyronine T₃ and leptin) of rats suffering from obesity. The rats (n=48) were divided into two main groups, the first main group (n=6 rats) fed on basal diet as a control negative group. The second main group (n=42 rats) received high fat diet for 6 weeks to induce obesity in rats. After these periods, the mean value of body weight gain% was estimated in the two main groups, also blood samples were collected from all rats to estimate the levels of cholesterol and triglycerides, then the high fat diet group was divided into (7) subgroups (n=6 rats for each), the first subgroup fed on high fat diet as a control positive group. Subgroups (2 and 3) were fed on high fat diet supplemented with 2% and 4% Sage, respectively. Subgroups (4 and 5) received high fat diet supplemented with 2% and 4% Purslane, respectively. Subgroup (6) fed on high fat diet supplemented with 2% mix (1% sage, 1% Purslane). The last subgroup was received high fat diet supplemented with 4% mix (2% sage, 2% Purslane). The results cleared that, addition of Sage (*Salvia officinalis*) or Purslane (*Portulaca Oleracea*) or mix of them at any tested levels (2% or 4%) to the high fat diet decreased the body weights, in addition to significant decrease in the mean values of serum cholesterol, triglycerides, low-density lipoprotein cholesterol (LDL-c), very low-density lipoprotein (VLDL-c), glucose, aspartate amino transferase (AST) and alanine amino transferase (ALT) in all treated groups, compared to the positive control groups, while high-density lipoprotein (HDL-c) increased, also the mean values of T₃, T₄ and leptin hormones were improved. It was concluded that, the mix of sage and purslane at high level (4%) showed the best effect on body weights, lipid profile, liver functions, glucose level and hormones of obese rats fed on high fat diet.

Key words: Sage (*Salvia officinalis* L.), Purslane (*Portulaca Oleracea* L.), obesity, rats, lipid profile, glucose, liver enzymes, hormones (leptin, T₃ and T₄).

Published In: Egyptian journal of nutrition and health
Published by society of feeding mind, combating malnutrition (2012)
REFERENCES


