

**PRODUCTION OF SOME SPECIAL FOODS FOR
THE PREVENTION OF VASCULAR
DISEASES.**

By

SALWA FAROUK MOHAMMED HASSANIEN

B.Sc. Home Ec. (Food Science), Al-Azhar University, 1999

M.Sc. Agric. Sc. (Food Science and Technology), Ain Shams University, 2007

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This thesis for Ph.D. degree has been approved by:

Dr. Zakaria Ahmed El-Shamy

Prof. Emeritus of Food Science and Technology, Faculty of
Agriculture, Suez Canal University

Dr. Magda Habeb Allam

Prof. Emeritus of Food Science and Technology, Faculty of
Agriculture, Ain Shams University

Dr. Ibrahim Mohamed Hassan

Prof. Emeritus of Food Science and Technology, Faculty of
Agriculture, Ain Shams University

Dr. Manar Tawfeek Ibrahim

Prof. of Food Science and Technology, Faculty of Agriculture, Ain
Shams University

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Under the supervision of:

Dr. Ibrahim Mohamed Hassan

Prof. Emeritus of Food Science and Technology, Department of Food Science, Faculty of Agriculture, Ain Shams University (Principal Supervisor)

Dr. Manar Tawfeek Ibrahim

Prof. of Food Science and Technology, Department of Food Science, Faculty of Agriculture, Ain Shams University

Dr. AL-Sayed Farahat AL- Sayed

Research of Food Science and Technology, Food Technology Research Institute, Agricultural Research Center

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ABSTRACT

Salwa Farouk Mohammed Hassanein: Production of Some Special Foods for the Prevention of Vascular Diseases. Unpublished Ph. D. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2012.

Herbs and spices namely clove buds (*Syzgium aromaticum*), rosemary (*Rosmarinus officinalis*), ginger (*Zingiber officinale*) and curcuma (*curcuma longa*) were extracted by using water extraction at two temperatures (50 and 100 °C) and hydrodistillation to obtain essential oil (EOs). The yields of hot water extracts were determined. For hydrodistillation extraction the yield of EOs were 7.00, 1.08, 0.80 and 0.63g/100g dry plant for clove buds, rosemary, ginger and curcuma, respectively. The total phenolic content of EOs was high for both clove buds (210 ± 0.5 mg GAE/ml) and ginger (211.8 ± 0.9 mg GAE/ml) followed by curcuma (88.9 ± 1.6) and it was low in rosemary (36.4 ± 0.8 mg GAE/ml). An increase in radical scavenging activity (RSA) was observed with increased concentration and heating temperature from 50 to 100 °C. Clove EOs showed the highest RSA at different concentrations from 5 to 150 µl/ml followed by ginger and curcuma EOs. The reducing power of the EOs of the four tested plants was higher than that of the compared standards (BHT, tocopherol and ascorbic acid). The highest reducing power was found in clove buds followed by rosemary and ginger and the least was that of curcuma.

The major aroma constituents of the hydrodistilled fraction of the EOs of the tested plants were identified by GC analysis.

Biological evaluation of the EOs was carried out in albino rats by following the changes in body weight, organs weight, blood lipid profile, total antioxidant capacity and lipid peroxidation as well as liver and kidney functions.

The histopathological alterations induced in heart, brain, liver, kidney, spleen and testes of the control group, hypercholesterolaemic group and hypercholesterolaemic groups treated by oral administration of

50 and 100mg /kg BW of the EOs of clove buds, rosemary, ginger and curcuma were studied in details after 30 and 60 days. In many cases, oral administration of EOs succeeded in reducing histopathological changes occurred as a result of feeding rats hypercholesterolaemic diet.

Sensory assessment was carried out on cake and biscuit samples supplemented with 0.1, 0.2 and 0.4% of clove buds powder or 2, 4 and 8% rosemary or ginger or curcuma powder.

Key words: Essential oil, Clove buds, Rosemary, Ginger, Curcuma, Total phenol compound, Antioxidant activity, Atherosclerosis, Histopathology, Cake, Biscuit.

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