Hindawi Publishing Corporation
Disease Markers
Volume 2014, Article ID 386425, 8 pages
http://dx.doi.org/10.1155/2014/386425

Research Article

Avocado Oil Supplementation Modifies Cardiovascular Risk Profile Markers in a Rat Model of Sucrose-Induced Metabolic Changes

Octavio Carvajal-Zarrabal,[1] Cirilo Nolasco-Hipolito,[2] M. Guadalupe Aguilar-Uscanga,[3] Guadalupe Melo-Santiesteban,[4] Patricia M. Hayward-Jones,[1] and Dulce M. Barradas-Dermitz[5]

[1] *Biochemical and Nutrition Chemistry Area, University of Veracruz, SS Juan Pablo II s/n, 94294 Boca del Río, Ver., Mexico*
[2] *Department of Molecular Biology, Faculty of Resource Science and Technology, University Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia*
[3] *Food Research and Development Unit, Veracruz Institute of Technology, Calz. M.A. de Quevedo 2779, 91860 Veracruz, Ver., Mexico*
[4] *Pathology Laboratory, Institute of Forensic Medicine, University of Veracruz, SS Juan Pablo II s/n, 94294 Boca del Río, Ver., Mexico*
[5] *Biological-Chemistry Area, Veracruz Institute of Technology, Calz. M.A. de Quevedo 2779, 91860 Veracruz, Ver., Mexico*

Correspondence should be addressed to Octavio Carvajal-Zarrabal; ocarvajal@uv.mx

Received 27 June 2013; Revised 16 December 2013; Accepted 17 December 2013; Published 25 February 2014

Academic Editor: Fabrizia Bamonti

The purpose of this study was to evaluate the effects of avocado oil administration on biochemical markers of cardiovascular risk profile in rats with metabolic changes induced by sucrose ingestion. Twenty-five rats were divided into five groups: a control group (CG; basic diet), a sick group (MC; basic diet plus 30% sucrose solution), and three other groups (MCao, MCac, and MCas; basic diet plus 30% sucrose solution plus olive oil and avocado oil extracted by centrifugation or using solvent, resp.). Glucose, total cholesterol, triglycerides, phospholipids, low- and high-density lipoproteins (LDL, HDL), very low-density lipoprotein (VLDL), lactic dehydrogenase, creatine kinase, and high sensitivity C-reactive protein concentration were analyzed. Avocado oil reduces TG, VLDL, and LDL levels, in the LDL case significantly so, without affecting HDL levels. An effect was exhibited by avocado oil similar to olive oil, with no significant difference between avocado oil extracted either by centrifugation or solvent in myocardial injury biochemical indicators. Avocado oil decreased hs-CRP levels, indicating that inflammatory processes were partially reversed. These findings suggested that avocado oil supplementation has a positive health outcome because it reduces inflammatory events and produces positive changes in the biochemical indicators studied, related to the development of metabolic syndrome.

1. Introduction

Food is a factor that plays a key role in life style, a determining influence on health and quality of life. It is known that populations with a high consumption of meat, dairy foods, and sugar have a higher mortality rate than those that feed mainly on fruits, vegetables, fish, and unsaturated oils [1]. Undesirable effects on health are associated with an excessive intake of carbohydrates (sugars) and fats. Manifestations of health disorders in people with metabolic implications are related to the incidence and prevalence of chronic and degenerative diseases such as obesity, diabetes, cardiovascular disease, and dyslipidemia (low HDL-cholesterol and high triglycerides), among others [2, 3]. Although there are many factors that contribute to its development, one of the main causes that lead to these conditions is the diet that is consumed. A diet containing a great amount of nutrients produces a strong impact on structure, physiology, and cellular metabolism. In recent years, the increase in these diseases has become a global public health problem inspite of the increasing medical knowledge for their prevention and treatment; consequently, the nutritional aspect seems to remain vital.