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ORIGINAL PAPER

Quercetin in the Treatment of Dyslipidemia

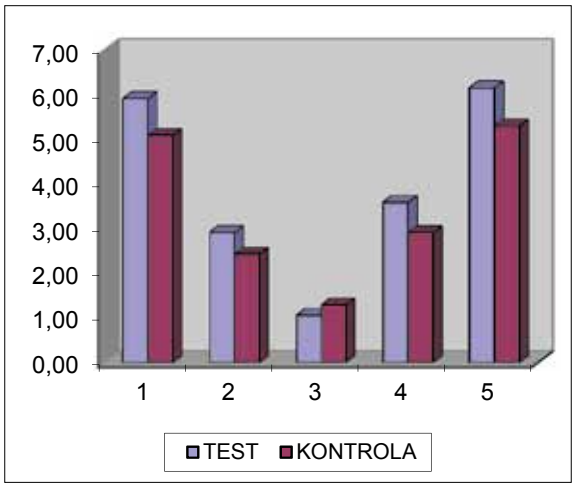
Emir Talirevic, Jelena Sehovic
Moja Klinika, Avaz Twist Tower, Sarajevo, Bosnia and Herzegovina

Dyslipidemia is a relatively common problem observed in clinical practice, seen both in instances when evaluating patients with subjective problems as well as among those coming to take a regular preventive exams. needless to say, discovery of any significant vascular disease necessitates initiation of proven medical therapy, which, ideally, besides its action on blood lipid values, sholud also exert effect on other, equally important parameters of vascular disease. **Study goal:** Goal of the sudy was to evaluate effects of regular consumption of quercetin on blood lipid values among healthy persons with dyslipidemia discovered on routine laboratory work up for different reasons. The study was designed as double blind, randomised study with two hunderd patients in each arm and total duration of the study being two months. **Results:** Groups were randomized in accordance with age and sex of patients as well as degree of blood lipid elevations. Average cholesterol, triglycerides, HDL and LDL value in both groups were similar to statisticaly insignificant differences among groups. Test group A had average values of cholesterol 6,21 mmol/l, triglycerides 3,02 mmol/l, HDL 0,89 mmol/l and LDL 3,98 mmol/l. Control group had values of same parameters as follows 6,17 mmol/l, 3,14 mmol/l, 0,92 mmol/l and 3,84 mmol/l respectively. Upon completion of therapy, test group has demonstrated a decrease in cholesterol, triglyceride and LDL values with parallel increase in HDL. Average cholesterol values at the end of the study were 5,09 mmol/l, whereas HDL and LDL values changed to 1,29 mmol/l and 2,91 mmol/l respectively. **Discussion and conclusion:** Patients rarely agree to start taking medications on a permanent basis, medications most of which are related to certain, not that infrequent, side effects. So these persons start using other means in an attempt to put blood lipids under control. Some of these means include lifestyle modification, exercise, but also use of food supplements that are proven to lower blood lipids. Among these available supplements, quercetin has recently attracted a lot of attention due to its strong antioxidant effects. **Key words: dyslipidemia, quercetin, health promotion activities.**

Corresponding author: Emir Talirevic, MD. Moja Klinika, Avaz Twist Tower, Tešanjska 24a, 71000 Sarajevo.

1. INTRODUCTION

Dyslipidemia is definately one of the most common medical/biochemical disturbances observed in clinical practice by physicians of all specialties (1, 2, 3). It makes no difference if we talk of cholesterol, HDL, LDL, tryglycerides or disturbed ratio between them, these disturbances exert great effect on health of the individual as well as on the health of the nation (1, 3). Such importance stems from numerous reasons. First of all, due to their common occurence, even slight disturbances will have frequent occurence in the general population thereby explaining the effect on health in the society. To illustrate this, we can simply observe the effect dyslipidemia has on occurence of symptomatic cardiovascular or cerebrovascular disease. Naturaly, medical industry has developed some quite effective and strong prescription drugs that are able to sucessfuly control different types of dyslipidemia and to reduce mortality among persons afflicted by these conditions. Unfortunately, statins, as the drugs most often prescribed for this purpose, are not without their side effects. Significant percentage of patients develop muscle aches as well as other disturbances after initiation of therapy whereas small number of patients ends up with potentially fatal rhabdomyolysis with consequential kidney failure and other, well known complications. These things are not an issue when we come across a high risk patient in whom these risks are quite acceptable and justified when deciding on potential therapy. However, when asked to decide on treatment strategy in an asymptomatic patient who wants a consult because of accidentaly discovered dyslipidemia, side effects become an issue that cannot be neglected. Very few patients choose immediate initiation of statin therapy for numerous reasons: first of all, duartion of statin therapy is (life)long, that is, the drugs have to be taken for quite some time and their beneficial effects disappear almost as soon as the drugs are stopped. Besides, most of these asymptomatic patients, when introduced to potential side effects, choose to pursue alternative treatment methods, most often lifestyle modification and use of supplements. Throughout the years, several food supplements proved capable in lowering blood lipid values and became widespead in attempts to lower blood lipids (4, 5). Out of many, quercetin drew particular attention to itself. Quercetin is a strong



Graph 1. Representation of cholesterol values (column 1), tryglycerides (column 2), HDL (column 3), LDL (column 4) and apolipoprotein B (column 5). Graph represents initial and finala values of the documented parameters.

antioxidant with several different positive effects among which are anticancerogenic, antiatherosclerotic as well as different other actions (6). Quercetin is found in different sources, however, the highest concentration is observed in wild apples where its concentration in 100 grams is greatest as compared with other sources (7). Effects of quercetin on lipid levels in humans has not been evaluated so far.

2. STUDY GOAL

The goal of the sudy was to evaluate effects of regular consumption of quercetin on blood lipid levels among asymptomatic persons with dyslipidemia discovered on routine laboratory work in ambulatory practice.

3. METHODS

The study was designed as double blind, randomised study with two hunderd patients in each arm and total duration of the study being two months. Groups were randomized in accordance with age and sex of patients as well as degree of blood lipid elevations. Quercetin used in the study was obtained from local manufacturer under brand name CardioFit with seperate, independent quality control and quercetin measurement being conducted in biochemical laboratory Biovisa. All patients were without any other medications during the duration of the study and all lifestyle or nutritional interventions were specifically discouraged. All patients were subjected to measurement of fasting blood lipids on two occasions; before entering the study and upon study completion. All analyses were conducted on the same device with blood sample collection at 9 a.m. and cessation of any food or fluid intake after 7 p.m. preceding day. Test were conducted by the same laboratory ingeneer in a manner defined in accompanying device instruction manual.

4. RESULTS

Average cholesterol, triglycerides, HDL and LDL value in both groups were similar to statisticaly insignificant differences among groups. Test group A had average values of cholesterol 6,21 mmol/l, triglycerides 3,02 mmol/l, HDL 0,89 mmol/l and LDL 3,98 mmol/l. Control group had values of same parameters as follows 6,17 mmol/l, 3,14 mmol/l, 0,92 mmol/l and 3,84 mmol/l respectively. Upon completion of therapy, test group has demonstrated a decrease in cholesterol, triglyceride and LDL values with parallel increase in HDL. Average cholesterol values at the end of the study were 5,09 mmol/l, whereas HDL and LDL values changed to 1,29 mmol/l and 2,91 mmol/l respectively. We also observed a decrease in tryglyceride values, however as the study was not designed to monitor changes in tryglyceride values and bearing in mind great effect of nutrition on this parameter, we did not include change in this parameter in the discussion of this study. As a part of a separate study, measurement also included analysis on apolipoprotein B which is a proven risk factor for development of cardiovascular diseases, however, due to short duration of the study, decrease observed among patients in the test arm of this study was not considered clinicly relevant, although it was documented.

5. DISCUSSION

Dyslipidemia remains very important risk factor for the development of myocardial infarction, stroke and other cardiovascular and cerebrovascular disorders (3). Side effects, costs and duration of statin therapy makes it unappealing to many asymptomatic patients found to have this problem and are one of the main reasons making patients try some alternative methods of bringing these parameters under better control. Different supplements have more or less effect in this regard but they are all limited in their action to dyslipidemia only. Quercetin, just like statins, has pluripotential actions which are mostly due to its antioxidant actions (6). In this study, we have proven that quercetin use exerts positive effects on blood lipids. Throughout duration of the study, none of the patients had any undesired side effects necessitating cessation of therapy or exclusion from the study. Logical sequel to this study is to evaluate whether long term treatment with quercetin brings about reduction in incidence of cardiovascular diseases among persons with dyslipidemia. This will definitly be of interest given reduction of apolipoprotein B observed incidentally in this study. In any case, we can easily state that we have added another valuable supplement to our therapeutic armamentarium – Quercetin.

Conflict of interest: none declared.

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