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Protective features of red wine, in particular of Terrano

Already in the 80es several epidemiological studies were published relating about an inferior inception rate of angina, myocardial infarction and sudden coronary death in alcohol consumers versus abstainers. Indeed all these studies did not mention any difference between wine drinkers and all another alcohol consumers, although the positive effects of alcohol, revealed by an inferior incidence of coronary diseases, were statistically evident most of all in moderate then in heavy alcohol consumers.

In 1987 Piccolo and D'Este published a review where about 20 epidemiological studies written in a 20 years time frame (from 1967 to 1986) were analysed: almost two third of these studies revealed an inferior incidence of serious coronary diseases in alcohol consumers; only two among them reported about a negative effect on coronaries, while in other two studies no relevant difference in coronary events was found between consumers and non consumers, especially when moderate consumers were taken as a sample. In only one study the authors connected a precise kind of drink with a protective effect and for the first time an inferior death rate for ischemic heart diseases was observed in countries where wine consumptions prevailed. In more recent times many reports stated that average moderate wine drinkers are less affected by the risk of death risks related to cardiovascular diseases then non drinkers.

Actually moderate wine quantities (200-300 g) can boost the circulation of antiaterogenic HDL: the daily consumption of 10g of alcohol increases them of 1-2%, while the brake-up of ethanol consumption brings them back to their initial value in a 2-4 weeks time.

This could depend on the induction of hepatic microsomal enzymes, on a stronger reduction of cholesterol thanks to the bile and on the reduction of endothelial lyposis hepatic levels. The alcohol-induced increment of HDL is higher for HDL2 and HDL3: these both classes are rich of apoprotein E and poor of apoprotein A1-A2 and Apo C III. This particular quantity-oriented lipid asset has been considered for a long time as the only responsible of the inferior incidence of ischemic heart diseases in moderate drinkers.

The protective role of alcohol has been also related to other situations beyond the increment of high density lipoproteins (HDL) and the higher levels of Apolipoprotein A-1, i.e. to the reduction of fibrinogen with growth of plasma fibrinolytic activity and finally also to the direct inhibition of platelets aggregation.

These metabolic and haematic modifications are evident in all moderate alcohol drinkers, especially in case of table wine.

We can first of all say that before this moment an accurate analysis of the literature related to the metabolic damage caused by alcohol consumption had not clearly revealed a cause-and-effect connection between usual alcohol consumption (as beverage) and disease.

Indeed things change when we analyse the data of the most recent studies based on groups of moderate usual drinkers versus abstainers, where an inferior incidence of ischemic heart diseases is much more evident in moderate consumers than in abstainers. Indeed we can talk about positive effects on heart diseases only by an alcohol quantity over (as we already stated) 80 g per day.

Actually the possible relationship between wine consumption and heart diseases has been recently revised in a positive way. We would like to refer to the many studies witnessing through

evidence the positive effects of some typical wine components (most of all exclusively present in red wines) according to the possible cardiovascular risk connected to coronaries or cerebral disturbances.

The new hypothesis according to the protective action of some substances that can be found in wine (beyond alcohol as such) was achieved indirectly starting from the epidemiologic analysis of coronary diseases.

The World Health Statistics in 1988 specified that the death rate caused by ischemic heart diseases throughout the European countries was the following: on 100.000 people of an age between 30 and 69 years the minimum death rate was 94 deaths on 100.000 for males and 20 on 100.000 for females. This low death rate was typical for France while the maximum rate was found in Northern Ireland: 406 for males and 142 for females on 100.000 people always of the same age (between their thirties and sixties). These data have always been reconfirmed also in the following studies.

The inferior death rate caused by ischemic heart diseases registered in France has always been a surprising data since this country is for some features part of the Mediterranean area, indeed the food and life habits show a big difference from all the Southern European countries that have similar features but a higher death rate - although the fat and red meat consumption together with smoke are actually less widespread, i.e. Italy, Greece, Spain, Portugal and former Yugoslavia.

Actually the diary products and milk-fat consumption, particularly butter and cholesterol-rich meat, is certainly much higher in France than in those other countries listed above and the multivariate analysis of French people's average diet (according to a calculation on a very high number of variables) has provided an almost definite explanation connected to the per capita red wine consumption. Same results were found in a parallel study on male population in Great Britain where people consuming moderate quantities of alcohol (wine in particular) presented an inferior coronary disease rate than abstainers. The reduction of coronary risk connected to red wine for people consuming constantly 30 g of alcohol per day was 40% .
The best possible consumption seems to be a quantity around 200-400 g of wine per day, i.e. a content of 30-40g of alcohol.

All these data together and most of all the ones referred to the epidemiologic evidence in France and to the inferior incidence in this nation of the death rate on the whole and in particular the one referred to heart and brain related vascular events started a debate which final considerations are nowadays defined as "the French paradox": generally hard fat and cholesterol oriented diets are always associated with an increment of cardiovascular risk; on the other hand the epidemiologic evidence demonstrated that the incidence of coronary heart diseases is less prevailing in France then expected (by considering the average hard fat and cholesterol consumption in this population). This odd situation was associated to the regular consumption of moderate wine quantities in this country.

In particular the best daily alcohol level (20-30g) is able to reduce the cardiovascular risk of 40% and prevents arteriosclerosis not only because of its action on high cholesterol density lipoproteins (in fact in French people cholesterol levels are much higher than in other countries) but also due to the effects of ethanol on the haemostatic asset. Platelets aggregation, a factor which is strictly related to cardiovascular diseases, is significantly inhibited from this kind of alcohol, if drank on a daily basis according to the here related quantities.

In the same way the daily consumption of small wine quantities (by an alcohol content not superior to 13 degrees) determines the increase of the plasminogen activator or tPA which is responsible for the fibrinolytic activity at plasma level. Other recent studies have confirmed this

relationship between moderate alcohol consumption and tPA levels capable to reduce fibrinogen quantities of plasma together with the reduction of Lp(a) concentration.

Particularly interesting elements are related to alcohol half-life according to the action of fibrinogen and fibrinolysis at the coagulation level that has been studied in a time frame between 12 and 18 hours. After the consumption of alcoholic drinks, platelets aggregation is reduced for ca. 24 hours. After this time frame it gets back to the previous levels or it definitely increases causing a rebound effect.

The mere observation of this phenomenon has highlighted the bad effects of non continuous alcohol consumption, most of all of elevated alcohol consumption - very common in the British population during the week end and responsible of the higher risk of myocardial infarction and stroke among this population. The peculiar features of red wines (only) because of their content of phenolic tannins and flavonoids, of epicatechin etc., which are all powerful antioxidant, have determined the peculiarity of this alcoholic beverage, striking the difference from white wine, but most of all, from all other alcohol drinks (alcohol and spirits), since they lack antioxidants and are frequently modified by additives that change their features and reduce their protective activity at endothelial and haematic level.

A recent study of the Nutrition Foundation of Italy stated again the important and negative role of free radicals on coronary diseases. Free radicals are molecules automatically generated by the human body and producing damages to cells structures because of the oxidation process that they start. Among the elements boosting the production of free radicals we find cigarettes smoke inducing F2-isoprostanes at haematic level. In this way free radicals determine the rapid degradation of nitroxide, that has the function to contrast the hardening of blood vessels walls and to act as a vasodilator, especially on coronary arteries.

Among the substances that can increase free radicals production we can find: air pollution, the excessive exposure to ultraviolet rays, the excessive spirit consumption, diets poor of vitamins or unbalanced diets and physical exertion in absence of training.

In contrast with the negative effects produced by free radicals anti-oxidating substances are connected to beneficial effects: among these substances we find as first vitamin E, A and C, phenolic tannins and flavonoids, epicatechin, resveratrol, polysaccharides and many other elements present in several red table wines. This feature was considered a striking factor in the explanation of the “French paradox” for the possibilities of constantly fighting arteriosclerosis in people usually consuming moderate red wine quantities (200-400 g) during meals.

According to the last experiments, another evidence of this assumption was found in Fankel’s work evaluating the positive effects of flavonoids contained in wines. In his studies Frankel compared the action of flavonoids to the one of nitroxide at endothelial level. He also relates about the different behaviour of LDL activated receptors (according to non-saturable traditional receptors and the protection of endovascular walls from arteriosclerotic seepage). This assumption was demonstrated through experiments: Frankel hatched human low density lipoproteins, like LDL, with oxidating substances like copper by obtaining particularly high oxidation indexes. By adding red wine, that is rich of phenols, in several doses he reduced or completely inhibited the creation of oxidating components.