

Protection by Tocotrienols Against Hypercholesterolaemia and Atheroma

Sir,

Dr. Teoh *et al*'s paper¹ on tocotrienols and its effects on hypercholesterolaemia and atheroma in the rabbit model makes interesting reading. However, there are some disturbing errors in the data to which we wish to draw attention.

In the section "Materials and Methods", the authors do not specify the methodology used for the determination of the rabbit plasma cholesterol, LDL-cholesterol, HDL-cholesterol and triglycerides. Clearly, this information is essential and should be provided, especially since the investigation focusses on the effects of hypercholesterolaemia in the described rabbit model.

We suspect that these rabbit lipid profiles may have been quantitated using enzyme kits and calculating LDL-cholesterol via the Friedwald's equation. The experience of many workers in this field suggests that while the Friedwald's equation is appropriate for the determination of human LDL-cholesterol, its use in animal studies (including rabbits) can provide results that are not entirely dependable. The quantitation of lipoprotein lipids in rabbits and other animal species

is best achieved by first isolating the lipoproteins by ultra centrifugation and the quantitating the lipids (cholesterol, triglycerides) by an appropriate method which may include enzymatic kits.

Indeed the data of Teoh *et al*, reinforces our concern. In Table 1, the LDL-cholesterol values of the cholesterol fed rabbits at week 6 are much higher than that of total cholesterol i.e. 20.05 mmol/l LDL-C versus 18.77 mmol/l total cholesterol. This is an impossible value since $TC = VLDL-C + HDL-C + LDL-C$. Moreover, the standard deviations (SDs) in this table are often two or three times higher than the median values. The authors should have considered these high SDs since some values are obviously outliers within each group. The inclusion of such outliers (determined by using Rankitts plots) will further result in bias in the statistical analysis of the data set.

In view of these irregularities in the data we are of the opinion that the claim for a hypocholesterolaemic effect is highly suspect.

R Pathmanathan, FRCPA
K T Wong, MRCPATH

Reference

1. MK Teoh, JMK Chong, J Mohamed, KS Phang. Protection by tocotrienols against hypercholesterolaemia and atheroma. *Med J Malaysia* 1994;49 : 255-62.