

Curry leaf (*Murraya koenigii* L.) inhibits the oxidation of low density lipoproteins

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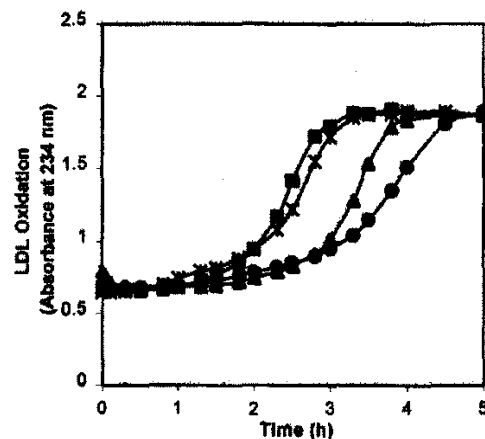
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The oxidation theory of atherosclerosis implicates the peroxidation of low-density lipoprotein (LDL) lipids, in the initiation of atherosclerosis. An early event in atherogenesis is the accumulation of lipid-laden foam cells in the arterial intima and studies suggest that oxidized LDL is causally involved in the formation of these foam cells. Oxidation of LDL is a free radical mediated process in which the polyunsaturated fatty acids contained in LDL are peroxidised to a variety of products including conjugated dienes and aldehydes (e.g., malondialdehyde). Circulating LDL is naturally protected from oxidation by its content of antioxidants such as vitamin E, ubiquinol and β -carotene. Non-nutrient antioxidants such as the polyphenolic catechins found in green tea and red wine have also been shown to inhibit the peroxidation of LDL in *in vitro* oxidation systems.

Curry leaf (*Murraya koenigii* L.) is a seasoning agent, widely used in Asian dishes, which has been found to have antioxidant properties. In the present study we tested the ability of curry leaf extracts to protect LDL from oxidation. The leaves were first extracted with methanol at 60°C, dried using a rotary evaporator, resuspended in water and extracted first with hexane and then with ethyl acetate.

Oxidation of LDL was induced by Cu^{2+} and followed as the change in the UV absorbance at 234 nm, a measure of conjugated dienes formed from the oxidation of polyunsaturated fatty acids. The results demonstrated that the ethyl acetate extract from curry leaf was as effective as the ethyl acetate extract from green tea to protect LDL against oxidation. The curry leaf extract delayed the oxidation significantly ($p < 0.05$), as seen by an increase in the lag time of 165% and a decrease in the oxidation rate of 75%.

Figure. Oxidation of LDL (100 $\mu\text{g/L}$) was induced by 5 μM CuSO_4 at 37°C, and the formation of conjugated dienes was monitored at 234 nm in the presence of no addition (■), green tea ethyl acetate extract (♦), curry leaf ethyl acetate extract (●) or curry leaf residual water extract (⊠).



Curry leaf therefore contains potent antioxidants which are soluble in ethyl acetate. The active constituents are likely to be polyphenolic compounds, like the catechins that are found in the ethyl acetate extract from green tea, but their identity remains to be determined.