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Oligomeric proanthocyanidins regulate cholesterol reflux from foam cells via autophagy

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Background: The regulation of lipid metabolism via autophagy in diabetes mellitus and obesity has been trending in the recent years. However, focus is required for atherosclerosis which develops due to lipid accumulation in the vessel walls. This study has been designed to explore the vital role of autophagy and its relationship with lipid metabolism in OxLDL induced foam cells. In this study, autophagy was induced by Oligomeric proanthocyanidins in OxLDL induced foam cells.

Method: Foam cell formation was evaluated by Oil red O and Nile red staining. Accumulation of lipid droplets was confirmed by mRNA analysis of perilipin. Autophagic activity was determined by mRNA and protein expression. *LC3b* and *p62* gene expression was examined by RT-PCR. The protein expression of *LC3b*, *p62* and *ATG5* was determined using Western blot analysis. Intracellular cholesterol and triglyceride levels in foam cells were quantitatively measured by enzymatic colorimetric assays. Lysosomal acid lipase levels were quantified spectrophotometrically.

Results: OxLDL induced macrophage derived foam cell showed increased accumulation of lipid droplets which was confirmed by Oil red O and Nile red staining. Oligomeric proanthocyanidins decrease intracellular cholesterol and triglyceride levels, increase lysosomal acid lipase activity, whereas the OxLDL induced foam cells exhibit increased accumulation of lipid droplets via overexpression of perilipin protein. Overexpression of *LC3b* and *ATG5*, and reduced expression of *p62* are marker of autophagic flux.

Conclusion: OxLDL-induced foam cells undergo autophagy upon treatment with Oligomeric proanthocyanidins.

Biography

S Jamuna has completed her MPhil in Biochemistry and joined PhD under the guidance of Dr. S Niranjali Devaraj, Department of Biochemistry, Guindy campus, University of Madras, India. She has an excellent knowledge of Bioinformatics and has published five papers in reputed journals.

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