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Characterization of the newly developed in vitro chylomicron assay and its potential applications

Andromeda Nauli

California Northstate University, USA

The small intestine absorbs lipophilic molecules and transports them in triglyceride-rich lipoproteins. We recently developed a cell-based model capable of producing these lipoproteins. The secreted lipoproteins, namely chylomicrons and very low-density lipoproteins, were isolated by NaCl gradient ultracentrifugation. Their triglycerides, apolipoprotein B, and particle size distribution were subsequently analyzed by enzymatic assay, ELISA/Western blot, and transmission electron microscopy, respectively. Our analysis showed that 21% of the total number of secreted lipoproteins were chylomicrons. Most of the chylomicrons had a diameter of 80-200 nm, and they contained both apolipoprotein B-48 and B-100. In addition, we were able to utilize lentivirus expression system, which is more effective than the regular transfection methods, in upregulating gene expression. Our newly developed model/assay can potentially be used to study dietary fat absorption, chylomicron biogenesis, oral lipophilic drug bioavailability, and intestinal transport of lipophilic molecules.

Biography

Andy Nauli is an Assistant Professor in the California Northstate University. He received his Ph.D. from the University of Cincinnati in 2005. His research interests include dietary fat absorption, chylomicron biogenesis, oral lipophilic drug bioavailability, and red meat allergy. His work has received more than 440 citations and \$200,000 in grant funding. He has trained more than 12 students in his laboratory; served as a reviewer for several journals, including JBC, Metabolism, AJP; chair of seed grant committee; reviewer for the American Association of Colleges of Pharmacy grants; and editorial member of several peer-reviewed journals.

anauli@cnsu.edu

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