

Vernix Caseosa Lipid Extraction: Comparison of Methods

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Vernix caseosa is a white creamy substance that covers the skin of an infant. It is produced during the third trimester by the skin of the baby and remains there until the age of one or even two weeks. It is uniquely human. In utero, vernix protects the skin against maceration, during the birth, it serves as a lubricant and after the delivery, it provides the baby protection against infection and the temperature regulation. As vernix is produced in third trimester, prematurely born infants lack it and on that account they may, among others, suffer from desiccation and therefore heat loss. It is important to study it thoroughly and to find a suitable substitute of vernix for the preterm infants.

It is composed of water (80%), lipids (10%) and proteins (10%). It contains desquamated cells that are able to absorb water. Mainly due to these cells, the extraction of the lipids from vernix is fairly complicated. Furthermore, there is extremely wide range of polarity of the lipids (from apolar squalene, wax esters, cholesteryl esters and diol diesters to polar triacylglycerols, fatty acids, ceramides and phospholipids).

In this research, two different methods of extraction are compared: extraction using chloroform and methanol (Folch et al, J. Biol. Chem., 1957, 226, 497-509) and extraction using methyl-*tert*-butyl ether and methanol (Matyash et al, J. Lipid Res., 2008, 49, 1137-1146). The lipid extracts were compared using direct infusion ESI-Orbitrap-MS detection with high resolution in positive and negative ion mode. The methods were evaluated according to the number of peaks in the spectra and the amount of the extracted lipids. The results were rather similar: in the spectra of the Folch extraction, there were 3241 ± 237 peaks and 25.0 ± 1.7 mg of extracted lipids and in the spectra of the other method, there were 3177 ± 346 peaks and 24.7 ± 4.2 mg of extracted lipids. In conclusion, both of the methods are suitable for lipid extraction of vernix caseosa.