Many cosmetics, ranging from lipstick to moisturizing creams, contain ingredients referred to as emollients whose main purpose is to keep the skin hydrated and prevent moisture in the skin from evaporating. This loss of water is responsible for reducing the suppleness and smoothness of skin leaving a dry, scaly texture. Emollients are chemicals that coat the skin and prevent moisture from passing through. Oils are very effective emollients but their slippery feel is undesirable. So the challenge is to find substances that prevent moisture loss but do not make the wearer feel like a greaseball. Cholesterol meets this challenge.

Cholesterol is readily absorbed into the surface of the skin and serves as a very effective emollient without feeling oily. Now for the concern. Cholesterol is found only in animals and therefore all sources are animal derived. Extraction from the spinal cords of cattle or from lanolin, the natural grease found on the wool coats of animals, is the most common route to commercial cholesterol and these days, there is concern about any product derived from animals, particularly cow brains and spinal cords, because of the possible transmission of bovine spongiform encephalopathy (BSE), or "mad cow disease." When cholesterol is extracted from spinal cords or wool, there is always the chance of contamination with trace amounts of other animal products, perhaps even the special proteins known as "prions" which have been implicated in BSE.

However, the risk of anybody contracting mad cow disease from cosmetics borders on zero. And yet, cosmetic producers have to contend with the perception among consumers that the inclusion of any animal product is undesirable. This is the reason that manufacturers are looking toward non-
animal sources of cholesterol. Chemists at Sigma-Aldrich, for example, have therefore developed a process to synthesize cholesterol from plant sources. Some plants, like the Mexican yam, are excellent sources of steroids which through a sequence of chemical reactions can be converted into cholesterol. This cholesterol can be used in cosmetics and pharmaceutical research, because of its growth-promoting properties in cell culture.

The development of a synthetic process to produce cholesterol from raw materials in plants is another example of problem-solving through the appropriate use of chemistry.

*The original McGill University OSS post can be found [here](https://www.mcgill.ca/oss/article/health/cholesterol-cosmetics).*