Incorporating conjugated linoleic acid (CLA) rich soy oil in the diet to reduce heart disease and diabetes risk factors

**Issue**
Dietary CLA is well recognized for its ability to protect against obesity related diseases and three grams of CLA per day has been proposed to be required to obtain the optimal human health benefits. However, conventional CLA food sources, such as beef and dairy fats contain only 0.2-2% CLA, which are quite low levels to satisfy CLA dietary needs. Consuming enough beef or dairy products to obtain three grams of CLA per day would result in an unhealthy increase dietary saturated fat and cholesterol. Therefore, the development of foods with a much greater CLA content, while low in saturated fat and containing no cholesterol, would be valuable in promoting a healthy diet and realizing the nutritional benefits of CLA.

Soy oil is naturally cholesterol free, low in saturated fat and composed of 50% linoleic acid (LA). A 20% CLA-rich soy oil was produced by converting soy oil LA to CLA, using ultraviolet light and an iodine catalyst. However, the problem with this processing method is the need to remove the iodine for food use.

**Action**
We have developed a new technology using a low pressure and steam in the presence of a solid metal catalyst to produce a 20% CLA-rich soy oil. The advantage of this method relative to the iodine processing method is that the solid catalyst can be easily removed by filtration or centrifugation to produce a food grade oil. Furthermore, the process takes only 2 hours, relative to the 12 hours required for photo-processing to produce CLA-rich oil.

**Impact**
The University of Arkansas has filed a patent to protect the novel technology and significant industrial interest is expected, as the conditions used to produce the CLA-rich oil are already used in conventional commercial refining of vegetable oils.

Half an ounce of CLA-rich salad oil or an ounce and half of CLA-rich potato chips will provide the 3g of CLA needed to obtain the health benefits reported for CLA. In contrast, an 8 ounce serving of beef or milk will only provide 0.27g and 0.06g of CLA. Only by increasing saturated fat and cholesterol from these animal sources can 3g of dietary CLA per day be realized. Therefore, including a small amount of CLA-rich oil in the US diet could be a major factor in reducing heart disease and diabetes risk factors.

**PI:** Andrew Proctor  
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