Atlas of Science
another view on science
https://atlasofscience.org

Other components of less common oilseeds are much more beneficial for health than their unsaturated fats

Polyunsaturated fatty acids (PUFA) are thought to be some of the most important nutrients and health promoting constituents, the presence of which is usually insufficient in a daily diet, which in turn is often connected with their wrong dietary proportions as well. The main sources of PUFA in a daily diet are oils extracted on an industrial scale from oilseed crops, such as rapeseed, soyabean or sunflower seed. Nevertheless, there is an increasing interest in less common plant seeds with diversified PUFA composition and proportions and especially in oils that are usually extracted from them by cold pressing. However, the health effects of such less common oils and their seeds is only partly recognized and the extent to which the oil fraction rich in PUFA is responsible for these effects is generally unknown. This question is especially important because PUFA-rich oilseeds are usually also a good source of protein and fiber, and other chemical compounds specific to a given plant that can have beneficial, neutral or even unfavorable effects on the body.

The aim of this research was to check the possibility of using PUFA-rich seeds of the following plants: industrial hemp, opium poppy, milk thistle and common flax, as well as defatted forms of these seeds and/or oils extracted from them for developing health promoting properties of diet. The most important aim of this research was to determine the extent to which the PUFA-rich oil fraction of these seeds is responsible for reducing metabolic disorders specific to obesity, including oxidative stress and lipid and intestinal disorders. Based on the obtained results, a relatively high nutritional value of hemp seed and poppy seed proteins was found, which was comparable with the nutritional value of soybean protein (data not published). It was also shown that a regular eating of some seeds (hempseed, flaxseed, milk thistle seed), which are a source of nutritionally important components, can be beneficial for health to an extent dependent on their amount, type of the diet and genetic predisposition. Moreover, it was determined that dietary supplementation with a small amount of some seeds (hempseed, flaxseed), which reflects their daily intake of 5,5 tablespoon for a man weighting 75 kg, can attenuate metabolic disorders specific to obesity. It was also observed that there is a possibility of using partially defatted hempseed and flaxseed for preventing some metabolic disorders specific to obesity. Finally, it was determined that the inclusion of some seeds into the diet (hempseed, milk thistle seed) is much more effective in attenuating metabolic disorders specific to obesity than the inclusion of oils from these seeds, which at the same time suggests that PUFA and some other compounds associated with them are less responsible for health promoting properties of oilseed crops than their other components.

The obtained results confirm an inverse relationship between the degree of food processing and health benefits that come from eating of such foods. The research suggests that there are also other components in oilseeds, besides PUFA, which have a decisive influence on health promoting properties of these seeds, which in turn can result in the isolation and identification of new therapeutic compounds from them. Moreover, the research brings valuable information for consumers and food producers looking for alternative sources of PUFA, which at the same time are a source of high-quality plant protein. The research can also be grounds for developing new dietary supplements created on the basis of less common oilseeds, including their defatted forms that are available as a by-product of oilseed processing industry, and used for the prevention and treatment of disorders specific to obesity.

Adam Jurgoński
Institute of Animal Reproduction and Food Research, Polish Academy of Sciences, Tuwima 10 Str.,10-748 Olsztyn, Poland

Publications

Intestinal, liver and lipid disorders in genetically obese rats are more efficiently reduced by dietary milk thistle seeds than their oil
Opyd PM, Jurgoński A
Sci. Rep. 2021

The effect of hemp (Cannabis sativa L.) seeds and hemp seed oil on vascular dysfunction in obese male Zucker rats
Majewski M, Jurgoński A
Nutrients 2021

Effects of native or partially defatted hemp seeds on hindgut function, antioxidant status and lipid metabolism in diet-induced obese rats
Jurgoński A, Opyd PM, Fotschki B
J. Funct. Foods 2020

Comparative effects of dietary hemp and poppy seed oil on lipid metabolism and antioxidant status in lean and obese Zucker rats
Fotschki B, Opyd PM, Juśkiewicz J, Wiczkowski W, Jurgoński A
Molecules 2020

Dietary hemp seeds more effectively attenuate disorders in genetically obese rats than their lipid fraction
Opyd PM, Jurgoński A, Fotschki B, Juśkiewicz J
J. Nutr. 2020

Comparative effects of native and defatted flaxseeds on intestinal enzyme activity and lipid metabolism in rats
Opyd PM, Jurgoński A, Juśkiewicz J, Fotschki B, Koza J
Nutrients 2018