



Optimizing flax raw products for tomorrow's uses

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Abstract:

Keywords: Engineered flax, Raw & refined products, Potential application.

Flax is a dual-purpose plant providing the fiber and oil. The principal use of fiber was for textiles manufacturing and oil for paints and varnishes. However, in the last decades devaluation of flax fiber in the world has been observed due to hardships associated with flax cultivation and processing, some disadvantages of flax fiber (poor elasticity, unpredictable quality) properties together with the appearance of cotton and synthetic fibers on the market. Recently, due to research findings the flax raw material appears to provide a variety of industrial and health benefits. For example manipulation of flavonoid genes (e.g. CHS, CHI, DFR, GT) expression significantly increases antioxidant potential and thus oil stability against oxidation and fatty acids composition. Squalene accumulation (potent anticancer agent) was increased by silencing carotene synthesis. Unique flax fiber was obtained, by co-synthesis of polyhydroxybutyrate (PHB) with cellulose during fiber development. The PHB-fiber embedded in polylactide may serve as a scaffold for tissue engineering and has been shown to be useful as biodegradable implant. The unique application of flax product has been shown in chronic wound healing. Pre-clinical study revealed healing improvement of chronic ulcers upon treatment with wound dressing based on new fibers strengthened by supplementation with activators derived



from refined seed extract.

Biography:

Jan Szopa-Skorkowski is professor and is the head of Genetic Biochemistry Department at Wrocław University. He has awarded twice by Polish Biochemistry Society (1971, 1973), Polish Academy of Sciences (1991) and Polish Prime Minister (2009).

Recent Publications:

1. Wrobel, M., Zebrowski, J., Szopa, J., 2004. Polyhydroxybutyrate synthesis in transgenic flax. *J. Biotech.* 107, 41-54.
2. Zuk, M., Dorotkiewicz-Jach, A., Drulis-Kawa, Z., Arendt, M., Kulma, A., Szopa, J., 2014. Bactericidal activities of GM flax seedcake extract on pathogenic bacteria clinical strains. *BMC Biotech.* 14, 70.

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