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Flax ber served as a major source to manufacture textiles, whereas seeds were pressed to extract edible oil. In the la decades devaluation of ax ber in the world has been observed. Recently, the renewed interest in ax products has bee noticed due to better understanding of the genes involved in ax productivity and ber quality. All these provide targets for ber improvement by the novel genetic/epigenetic methods leading to more diverse products based on ax bers. For example manipulation of gene expression signi cantly increases antioxidant potential, a ected lignin and pectin synthesis and cell wall arrangement. Up-regulation of E-glucanase gene protects plant against pathogenic infection, and thus increases be productivity and quality. Unique ax ber was obtained, by genetic engineering, with novel constituent that strongly a ects ber properties and application, for example the production of a polyhydroxybutyrate (PHB) which was accomplished by simultaneous expression of three bacterial genes under vascular bundles speci c promoter. e unique application of PHB- bers has been shown in chronic wound healing. Pre-clinical study revealed healing improvement of chronic ulcers upon treatment with wound dressing based on new bers. e healing e ect was potentiated by supplementation of PHB- bers with two activators derived from seeds and seedcake of ax accumulating antioxidant compounds. Up-regulation of antioxidants was achieved by simultaneous expression of three genes from avonoid pathway. e PHB- ber embedded in polylactide may serve as a sca old for tissue engineering and has been shown to be useful as biodegradable implant. Micronization proces can introduce structural changes in bers constituents to exhibit more functional groups, and thus might potentiate ber functionality. Indeed, highly reactive micronized ax bers might serve as a carrier for biologically active compounds.

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