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IMPORTANCE OF *CRAMBE SP.* IN MEDICAL AND COSMETIC INDUSTRIES

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Abstract

Crambe sp. are an annual and perennial plants with shrub form and belonging to Brassicaceae family. Sterols in seed oil uses at margarine as additive for reduce to blood cholesterol. Likewise; similar to *Simmondsia chinensis* oil and whale seminal oil, it uses at production of liquid wax. Instead of materials, which ones proven carcinogenic effect, Erucamid, obtained with transform of erucic acid, uses at personal care products (such as perfume, lotion and dye for cosmetics), dyes (for polissage), medical equipments have importance for healthy generation. Nitril and isothiocyanate in the *Crambe* leaves have potential uses against to cancer. It is a natural alternative to harmful mineral oils and silicon with omega-9 content. Otherwise *Crambe* oil protect stem cell, decelerate skin aging and fight with free radicals by stimulate to collagen production.

Keywords: *Crambe sp.*, seed oil, cosmetic, medicinal use.

Introduction

Crambe is a member of the Brassicaceae family and is an annual and perennial oil seed plant of which seeds can be consumed. The species complex extends throughout the Mediterranean region, Ethiopia and East Africa. *Crambe* has representation in the Mac-aronesian, Euro-Siberian, Mediterranean, Sindico-Saharan, Irano-Turkish and Sudan-Zambeian regions (Leppik and White, 1975). *Crambe* is not a well known species in Turkey although it is present in the country's flora. Renewables, like plant derived oils, are a sustainable means of supplying the essential products needed by world. Besides, global oilseed production is of the order of 450 Mt/year, with that figure predicted to scale up to 500 Mt by 2020 (OECD-FAO). Plant oils are already major agricultural merchandises with around 20% by value used for non-food applications in industry. Erucic and lauric acid are two plant-derived fatty acids and have been in fighting with petroleum alternatives for many years. Priorly cost has been major problem for development of new plant-derived oils. But now increasing crude oil cost and people concern about finite supply. Because of this reasons there is need to develop renewable products from plant oils (Stymne and Dyer, 2006). *Crambe* is one of the most hopeful "new" plants. *Crambe* oil extracted from *Crambe* seed. High in erucic acid (%57 of %35-50 oil), the seed oil is important in industrial applications including use as erucamide, coating, lubricants and nylon (Hirsinger, 1989; Cooke and Konstant, 1991; Lazzeri et al., 1994; Capelle and Tittonel, 1999). *Crambe* oil has very high capacity about removing warmth and high quality as well as some advantage about commercialization and storage (Comlekcioglu et al., 2008; Razavi and Nejad-Ebrahimi, 2009). *Crambe* has a potential use in industry such as biodiesel, oil industry and machine oil. Furthermore, seed cake after oil extraction can be used as an important feed for livestock. The industrial improvements and a wide range of people needs in developed countries led researchers seeking alternative products. *Crambe* is a preferable alternative agro-industrial material because of high erucic acid content in its seeds. (Seyis et al., 2012).

Usage areas of *crambe*

Crambe seeds have high glucosinolates content. It unmodified or after enzymatic hydrolysis by myrosinase, can negatively affect the nutritional quality of defatted proteinic meal in feeding. For these compounds and their degradation products, there are some potential interesting applications

after meal detoxification by glucosinolate removal and isolation. Non-edible uses include addition to mineral lubricants, in the manufacture of greases, and as a mouldlubricant in steel casting. Fully hydrogenated crambe oil is a white solid that has potential value as a component of wax compositions. However, a greater potential use exists in the industrial field for erucic acid products. Crude erucic acid is obtained by saponification of *Crambe* oil. This erucic acid yields two primary products on ozonolysis, the 13-carbon atom dibasic brassylic acid and the 9-carbon atom monobasic pelargonic acid (Lazzeri et al., 1994). Brassylic acid is used in the manufacture of polyester, plasticizers, alkydresins, lubricants, rubber additives, surface-active agents, new types of nylon, and other polymers (Cornelius and Simmons, 1969; Vargas-Lopez et al., 1999). Pelargonic acid finds use in the field of plasticizers, alkydresins, vinylstabilisers, salts, pharmaceuticals and synthetic flavours (Cornelius and Simmons, 1969). Otherwise, the primary market for high-erucic acid oils is erucamide, a slip agent critical to the manufacture and use of polyolefin films. Films such as polyethylene are produced commercially for familiar products such as bread wrappers, shopping and garbage bags, shrink wraps, and plastic sheeting (Vargas-Lopez et al., 1999). *Crambe* oil has biological degradation ability. This is significant for environment. The oils, rich in erucic acid, are used in various areas of the industry such as anti-blocking agent in polyethylene films, adhesive in printing, as anticorrosive material, in steel sheet metal industry, textile, detergent, perfume and various other industries (Tansi et al., 2003; Erickson et al., 1990). *Crambe* seed oil is an emollient that provides the skin with a perceivable softness without greasiness. The oil is high in omega-9 essential fatty acid making it ideal for skin nutrition and boosting skin hydration. For color cosmetics, it improves pigment dispersion. It is ideal for use in creams, lotions & body butters, lip products, hair care, sun care, body cleansers and baby care (Anonymous, 2017.).

Conclusions

Crambe has potential uses with high erucic acid content. It is an alternative product for production of biodiesel. *Crambe* has an important potential around the world for reduce the threat of global warming and eliminate air pollution which arising from fuel oils. Besides erucic acid content, *Crambe* seed oil have wide usage area such as medical and cosmetic industry with its different ingredient. Considering all of these, *Crambe* has remarked in the world and increased in demand on industrial oil market in recent.

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