

THE METHOD IS ABLE TO REMOVE AGRICULTURAL CHEMICAL RESIDUES WITHOUT NEGATIVE IMPACT ON PRODUCTS

Ignatyeva G.N
E-mail address: info@pectinworld.com
GJP.Ignatieva@Gmail.com

ABSTRACT

Besides the classic processing of citrus oils, juices, the production of eco products became important. Essential oils are a complex mixture of low molecular weight substances, mainly mono- and sesquiterpenes extracted from a plant, usually by hydrodistillation. Several pharmacological properties of these compounds have already been discovered, such as analgesic, antimicrobial, antimalarial, anticarcinogenic, anti-inflammatory, anticonvulsant, antifungal, antioxidant and gastro-protector activities. The citrus essential oil is used for arthritis, cellulite, depression, mental or nervous exhaustion, menstrual cramps, muscle fatigue, rheumatism, stress and etc. While most of the agricultural chemicals applied during cultivation are removed by washing, some agricultural chemical residues sometimes remain on the plant or fruits from which essential oils are derived and can be extracted with the essential oils. Thus, essential oils can sometimes contain trace amounts of agricultural chemicals. This project involves the industry method evaluation of removing agricultural chemical residues from citrus, citrus peels, essential oils. The main aim of this project is the production of eco-oils, eco-juices and citrus peels for the production of nanopectins, which have numerous healing properties. The removal can be performed by two methods. One of which involves contacting the essential oil including the contaminant with an aqueous alkaline solution and other method involves the contacting of the fruit with the aqueous alkaline solution. The project provides for the production of the eco-oil in a view to reduce the cost of production as well as maintaining the stability of the physical, chemical properties of the extracted oil, juice, peel. The method of US 2007/0237844 shows high purification under laboratory conditions. The essential oil obtained has a pleasant aroma. The method of US 2007/0237844 does show only partially purification under industry conditions. It impairs stability and shows negative impact on BRIX, nDt, solubility, CD index of the citrus oil. For examples, the BRIX and nDt was found to be 72,54 and 1,47002, respectively, while without treatment oil samples contained 72,61 and 1,47021, respectively. The stability is not more than 6 month; the solubility is not less than 12v/v. This treatment may change the ABS 200-650nm, color of citrus oils. The modified industry method shows more positive impact on the purification and the content of pesticides. This method, with slight modifications, is able to remove agricultural chemical residues without negative impact on CD index, peroxide test, and other physical and chemical properties of citrus oils. In general, agricultural chemical residue contents decreased. This method, with slight modifications, is able to remove pesticides such as *chlorpyrifos*, *imazalil*, *chlorpyrifos-methyl*, *pyrimethanil*, *pyriproxyfen*, *orto-fenilfenol*, *terbuthylazine*, etc. Test is covered by the accreditation of ENAC. Approximately 2-8 times lower amount of these pesticides was found in citrus oils in comparison with the oils of the previously described method. The method is accurate rapid to apply. The average content of some pesticides in the oils was in accordance with the habitual content in fruits for the eco oil production and nanopectin. Also, the aqueous alkaline solution removes the contaminant without substantially diminishing the organoleptic properties of the essential oil. There is no information available about the remove effect of pesticides on the yield of oils. This is the purpose of the following studies.

Keywords: Essential oil, nanopectin, pesticides, purification, application in medicine, cost of production.