

Study of Bixin Oxidation by Ionizing Irradiation

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Brazil is the world's largest producer of annatto, followed by Kenya and Peru (CORLETT, 2007). The fruit of the annatto tree is constituted by a capsule containing external spines and internal seeds with reddish coloration, providing a natural pigment which is environmentally efficient, being able to replace synthetic pigments and dyes. The active substance of the pigment is Bixin, which is a type of carotenoid which constitutes a greater percentage of pigment in these seeds and has a lipo soluble character (CUSTODIO, 2002). Bixin reacts with NaOH in a saponification reaction giving norbixin, which is water soluble. It is known that the destination of the dye extracted from the fruit is intended for industry, especially the food industry. The culture of annatto tree brings prospects of development of agricultural programs for medium and small producers, which are able to use decadent areas of other crops. In addition to the food sector, new applications for the pigment helps the development of family farming (BERTOLIN, 2016).

The pigment extracted from annatto undergoes a natural oxidation; this work aims to evaluate this phenomenon and also the oxidation of the pigment after the irradiation process. This work also evaluates of the how the oxidation process is affected by irradiation and the modifications introduced to irradiated pigments.

Irradiated and non-irradiated samples were characterized by UV-vis spectrophotometry and infrared spectroscopy (FTIR). The results are then discussed.

BERTOLIN, D. C.; OLIVEIRA, O. M. M.; SILVA, R. H.; COSTA, M. V. C. G.; NASCIMENTO, D. P.; **Plano de negócio para estudo de viabilidade de produção de urucum**. SINTAGRO (Simpósio Nacional de Tecnologia em Agronegócio), 06-08, october, Jales, SP, 2016. (Accessed in 2017-02-03 <http://www.sintagro.com.br/sintagro/images/anais/tematica1/plano-de-negocio-para-estudo-de-viabilidade-de-producao-de-urucum.pdf>)

CORLETT, F. M. F.; BARROS, A. C. S. A.; VILLELA, F. A. Physiological quality of seeds of urucum stored in different environments and packings. *Revista Brasileira de Sementes*, 29 (2), 148-158, 2007. (<http://dx.doi.org/10.1590/S0101-31222007000200021>)

CUSTÓDIO, C.C.; MACHADO-NETO, N.B.; CASEIRO, R.F.; IKEDA, M.; BOMFIM, D.C., Annatto (*Bixa orellana* L.) seed germination. *Revista Brasileira de Sementes*, Brasília, 24 (1), 197-202, 2002. (<http://dx.doi.org/10.1590/S0101-31222002000100028>)