Enzymatic-Assisted Extraction of Nordihydroguaiaretic Acid (NDGA) from *Larrea tridentata*

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Introduction. Nordihydroguaiaretic acid (NDGA) is a lignan considered as one of the most potent antioxidant. It is widely used in the cosmetic and pharmaceutical industries. NDGA is present in the resinous material of creosote bush leaves. However it can be only chemically synthesized. Creosote bush (*Larrea Tridentata*) is a plant of Mexican semiarid desert with several traditional uses due its important content of phytomolecules as tannins, polyphenols and lignans. In this study, we designed a NDGA production process using enzymatic hydrolysis by a commercial enzyme with laccase activity BIOLITE BSN.

Methods. Production process of NDGA has been done through enzymatic hydrolysis using commercial laccase from creosote bush leaves. It was evaluated different concentrations of enzyme 0.01%, 0.05% and 0.1% during kinetic studies (0,3,6,12,18 and 24 hours) evaluation the NDGA release, it was used a Thermomixer Eppendorf to 1000 rpm and a temperature of 35°C, with a sampling period of hour, respectively, Samples were filtered with paper whatman and recollected the hydrolyzed extract and put it on refrigeration until analytic uses. Analysis of extract was quantified by a specific method of HPLC.

Results. Figure 1 presents the chromatograms of the NDGA at several initial concentrations used as standard curve for the quantification of NDGA released after enzymatic hydrolysis of creosote bush leaves.

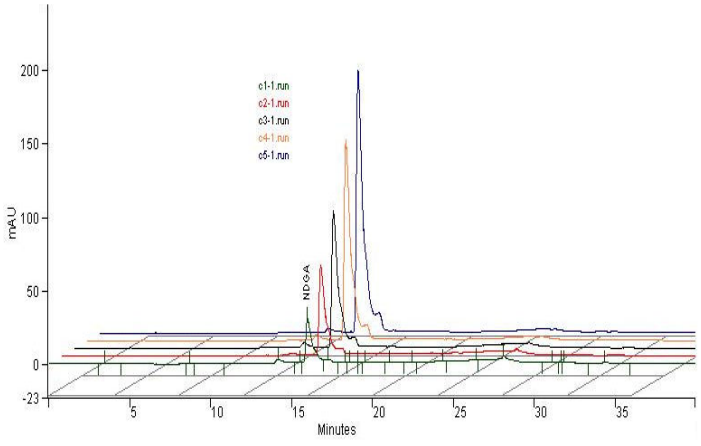

Fig.1 HPLC chromatograms of NDGA

Figure 2 presents kinetic results of NDGA extraction result under different enzyme concentration, obtaining the best accumulation condition using a enzymatic concentration 0.05% in a hydrolysis period of 24 hours.

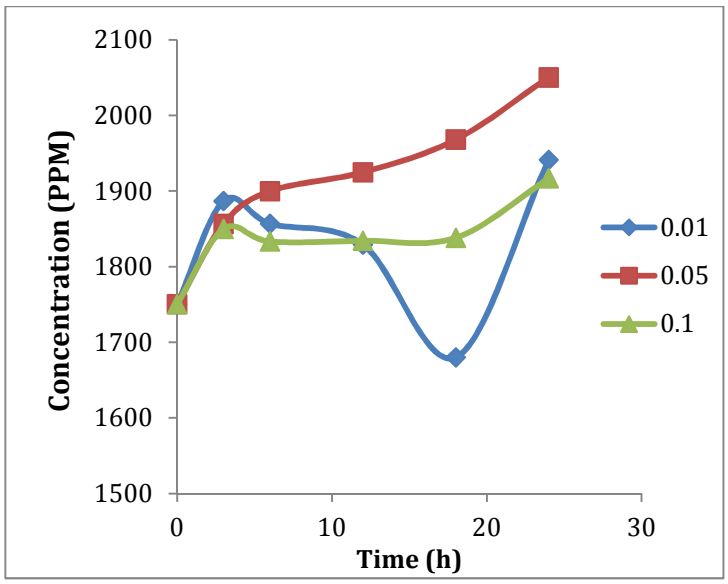

Fig.2 liberation of NDGA from enzymatic hydrolysis using different concentration of commercial laccase.

Conclusions. Result obtained, shows that the Lacase enzyme can be hydrolyzed creosote bush residues to production Nordihydroguaiatetic acid, also this work represent a biotechnological alternative way for production and however the optimization study is necessary.

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