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Inducing Mutations In Vitro in Chaste Tree (*Vitex Agnus-Castus*) with the Herbicide Oryzalin (Surflan)

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INTRODUCTION

Plant mutations are very useful in a breeding program because they are sources of novel phenotypes that could lead to the development of new cultivars. There are several chemical, physical, and molecular techniques that are available to mutate plant materials *in vitro*. This research documents the effects of the mutagen, oryzalin [4-(dipropylamino)-3,5-dinitrobenzenesulfonamide], available as the herbicide Surflan, on tissue cultured plants of *Vitex agnus-castus*.

MATERIALS AND METHODS

In this study, in vitro cuttings were exposed to oryzalin at three different concentrations, 0.3 mM, 1.3 mM and 2.8 mM, with three different exposure times, 30 minutes, 60 minutes and 90 minutes. Observations of the treated plants were taken for 16 weeks. Morphological changes and the number of cuttings survived were recorded to determine the lethal dose of oryzalin to *Vitex*.

RESULTS

It was found that the lethal dose of oryzalin that causes 50% of death to *Vitex* in tissue culture to be at 0.3 millimolar of oryzalin at 30 minutes of exposure time. Higher concentration or longer exposure time increased the death percentage of the cuttings. After 16 weeks, the surviving explants exposed to oryzalin were maintained in tissue culture for further growth and propagation. Plants that were treated are being field tested to evaluate plant growth and flowering.

This experiment demonstrated the effects of concentration and exposure time of oryzalin on *V. agnus-castus*. The results were as expected: the increase in concentration or the increase in exposure time increased the mortality of plants. The result of this experiment will enable the use of oryzalin for chemical mutagenesis in future research by providing the predicted mortality associated with the dosage of oryzalin. This chemical, when exposed to plants in vitro, can be used to create mutations in plants.