Edible Plants as a Drug Delivery System - Feasibility Study Using Phenylephrine Hydrochloride Transfer into Rosemary and Celery with Soil, Vase, and Hydroponics Methods

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This study was conducted to establish if pharmaceuticals can be successfully transferred into edible plants to provide an alternative delivery method for medication, which could improve patient compliance and satisfaction. Three procedures were tested as potential means of drug transfer. In the “soil method”, plants were given medicated solutions via the soil; the “vase method” consisted of plant stems being cut and placed in medicated solutions; the “hydroponics method” used a hydroponics system to expose the plants to medicated solutions. The medication was phenylephrine hydrochloride because it registers a false positive on a qualitative methamphetamine drug test. The plants that were exposed to the phenylephrine hydrochloride were Rosemarius prostrata (creeping rosemary) and Apium graveolens (celery). Rosemary was used in all approaches for drug transfer; celery was used only in the vase method to determine if other plants could potentially be subjects for pharmaceutical absorption. After the plants were in contact with medicated solutions, juices were rendered and drug tested. If medicine was transferred, the drug tests should indicate a positive result. Negative drug test results were returned from the soil method, but positive results were returned from the vase method (at a 0.03% drug concentration and above) and the hydroponics method. In the vase method, both the celery and rosemary caused positives. The results indicate that drug translation to edible plants can occur, medication transfer to non-tested plants may be possible, and the hydroponics and vase methods could produce pharmaceutical-containing edible plants that provide an alternative drug delivery method.

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