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R-59
COMPARISON OF RAPID AND CONVENTIONAL EXTRACTION METHODS FOR DETECTION OF 2DCB IN BRAZILIAN IRRADIATED FOODSTUFFS

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Irradiation of foods and foodstuffs in general has been considered as an important physical treatment in food technology. Both gamma and e-beam application are discussed now to be a good way to treat different kind of foods. Food irradiation is a process that consists of submitting the food already packed or in bulk at a carefully controlled amount of ionizing radiation for a predetermined time, with well-defined goals. Current Brazilian legislation as per Resolution – RDC No. 21 of January 26, 2001, says that any food can be treated with ionizing radiation whereas the minimum absorbed dose should be sufficient to achieve the intended purpose, and the maximum dose should be less than would compromise the functional properties and / or sensory attributes of the food. For each objective it is necessary to study the better condition and application to demonstrate and clarify to everyone that food irradiation process is used to improve the quality and give a saf e performance of the final product. Much has been discussed about the formation of dangerous chemical compounds formed by irradiation in foods containing fat. In order to provide more reliable information to consumer's confidence and present an economic, rapid and reliable method, we propose using two different radiation doses for detection of 2DCB in different types of Brazilian foods and compare the conventional extraction method as well as the European standard method EN 1785 (2003) for detection of 2-dcb with a rapid extraction method adapted using acetonitrile, in Brazilian irradiated foods.

Keywords: *Food Irradiation, Irradiation Detection, 2-DCB, Extraction Method*

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DOES THE QUECHERS SOLVENT ACETONITRILE DAMAGE GC COLUMNS?

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Claims of GC column damage from acetonitrile used for QuEChERS extractions have been reported often in presentations and scientific literature, but no definitive experimental results prove this to be true. We performed a ruggedness study on a 5% phenyl-type GC column, the stationary phase most used for multi-residue pesticide GC analyses, to define any performance degradation for pesticide retention time stability, pesticide response factor, and GC column stationary phase bleed that might result from using either acetonitrile or acetonitrile with 1% acetic acid, the two QuEChERS solvents. Repeated injections, over 1600, of 1% acetic acid in acetonitrile or 10% acetic acid in acetonitrile did not cause increased stationary phase bleed on the GC column. Organophosphorus pesticide retention times were extremely stable when the column was repeatedly temperature programmed to its maximum isothermal temperature of 330°C and its maximum programmable temperature of 350°C, showing less than 0.2% RSDs. Additional experiments where the column was continually programmed to 360, 370, 380, 390, 400, 410, and 420°C still yielded hardly any change in retention times, indicating surprisingly little loss of GC stationary phase under extreme operational conditions. Pesticide response factors and peak shapes, too, were very stable for the life of the experiment (including temperature programming to 420°C), except for 3 problematic pesticides, monocrotophos, azinphos methyl, and coumaphos, whose response factor variation was attributed to possible GC inlet liner deactivatio n degradation during solvent/standard injection. Ultimately, the protective polyimide polymer on the outside of the fused silica GC column was destroyed due to the very high temperature work, even before the stationary phase polymer on the inside, demonstrating the ruggedness of the 5% phenyl polymer and dispelling the myth of stationary phase damage caused by acetonitrile.

Keywords: *QuEChERS, acetonitrile, GC column, pesticides*