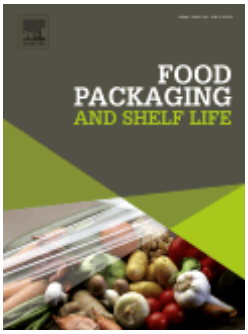

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Study of photoinitiators' migration kinetic in water and the aqueous food simulant 10 % ethanol

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Commission Regulation No. 10/2011 supersedes the previous legislation on testing migration plastic materials and articles intended to come into contact with foodstuffs. One of the major changes of the new regulation concerns food simulants used for migration testing, for example, the former simulant for hydrophilic foods, water, has been replaced by 10 % ethanol (v/v). With this in mind, in order to test, three photoinitiators (Irgacure® 184, benzophenone and 4-methyl benzophenone) and an amine synergist (ethyl-4-(dimethylamino) benzoate) have been selected as models compounds to check the migration into both simulants, at 3 different temperatures (4, 20 and 40 ^{o}C).

To study the migration kinetics, LDPE films additivated with the photoinitiators were used and the films were immersed in 10% ethanol (v/v) and water. The total analysis time depends on the photoinitiator and the temperature (from 8 to 168 hours). The analytes were determined by HPLC-DAD.

The results have shown that 10 % ethanol (v/v) cannot be considered as the worst case scenario for all the molecules; however, there are not big differences between the results in both simulants and further studies are needed to confirm the results obtained.

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