Set-up of the extraction method for the *in vitro* genotoxicity evaluation of deep fried meat

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Heat treatment is one of the most used procedures in cooking with several advantages for consumers such as preservation, higher digestibility and organoleptic changes of food. However, high temperature can lead to mutagen formation.

The aim of this project is to evaluate the *in vitro* genotoxicity of mutagenic compounds generated by deep frying of food cooked in mass catering companies. A baseline questionnaire was developed in order to obtain data about fryers, deep-fried food, frying oil or monitoring and cleaning habits from mass catering companies of Navarra. Data from twenty kitchens of eleven companies were obtained. Selection of kitchens is yet to be performed, before collection of samples begins.

In parallel, an extraction method for mutagens has been set up; a non-ionic polymeric adsorbent resin is used to extract the mutagenic compounds from cooked hamburgers. The *in vitro* genotoxicity evaluation of the extracts will be performed using the mini-Ames, the micronuclei assay and the comet assay.

Mutagenicity of an extract from an overcooked meat (30' of frying) was assessed by a mini-Ames test. The test was performed following the principles of the OECD guideline for the Ames test. The extract showed clear positive results in the TA98 strain in the presence of external metabolic activation. A weak response was also seen in the TA1535 strain in the absence of metabolic activation. The presence of bacteria in the extract and the necessity to filtrate the extracts will be discussed. Extracts from meat fried during different times (2', 5', 10', 20', 30') were tested in the TA98 strain in order to demonstrate that extracted mutagens were formed during cooking. Pure extracts and five ½ serial dilutions were evaluated. Extracts obtained after long frying times showed a positive dose-response dependant on S9 fraction. Experiments were performed with extracts from different extractions to observe the variation of the process.

Different dilutions of an extract obtained after 30' of frying will be evaluated using the Fpg-modified comet assay and the micronucleus test, with and without metabolic activation, in TK-6 cells. In order to perform these experiments, the toxicity of the extracts has been evaluated using the proliferation assay.

Financial support: Spanish Ministry of Economy and Competitiveness (BIOGENSA, AGL2015-70640-R). J.S. thanks the Asociación de Amigos de la Universidad de Navarra and the Government of Navarra for the pre-doctoral grants received.

S1.03