

An experience with Charm II System

Monique Morlot and Patricia Beaune

Laboratory Bernard Michaud S.A., Chemin de Berdoulou B.P.27, 64290 Gan France

Tel : + 33 5 59 21 91 27, fax : + 33 5 59 21 66 60, e.mail : labo@lunedemiel.tm.fr

The context

Bernard Michaud S.A. is a French company, situated in the south of France, it owns about 6000 hives and buys honey from many countries. To supply to the consumers honey with the best quality, an effective laboratory makes a lot of analyses in routine.

After the problem of chloramphenicol residue in China honey, the company decided to offer to the market a new concept: "Beekeeping in preserved territory" (registered trade mark). The beekeepers had to accept a schedule of conditions in order to collect honey without antibiotics and pesticides residues.

In front of the urgency, it was necessary to find an analytic method, rapid, reliable and adapted to routine analyses. The choice was Charm system II.

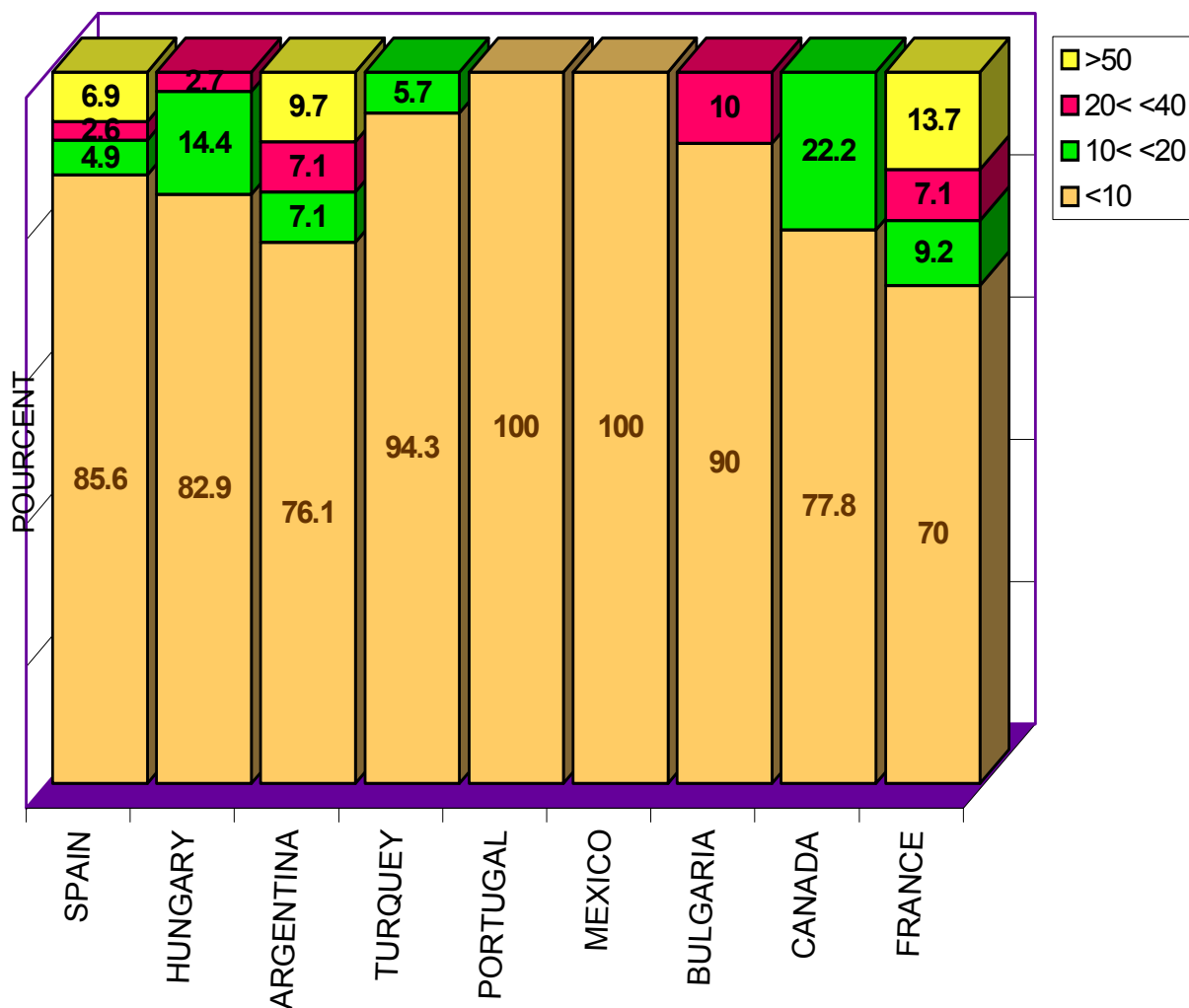
Quickly, a lot of results were obtained with screening tests. The results were compared with HPLC method some false positives results have been found.

Observations, tests

Several negative honeys were contaminated with chloramphenicol (00.3 ppb). The objective of this work was to evaluate the effect matrix.

The results are illustrated in the following table

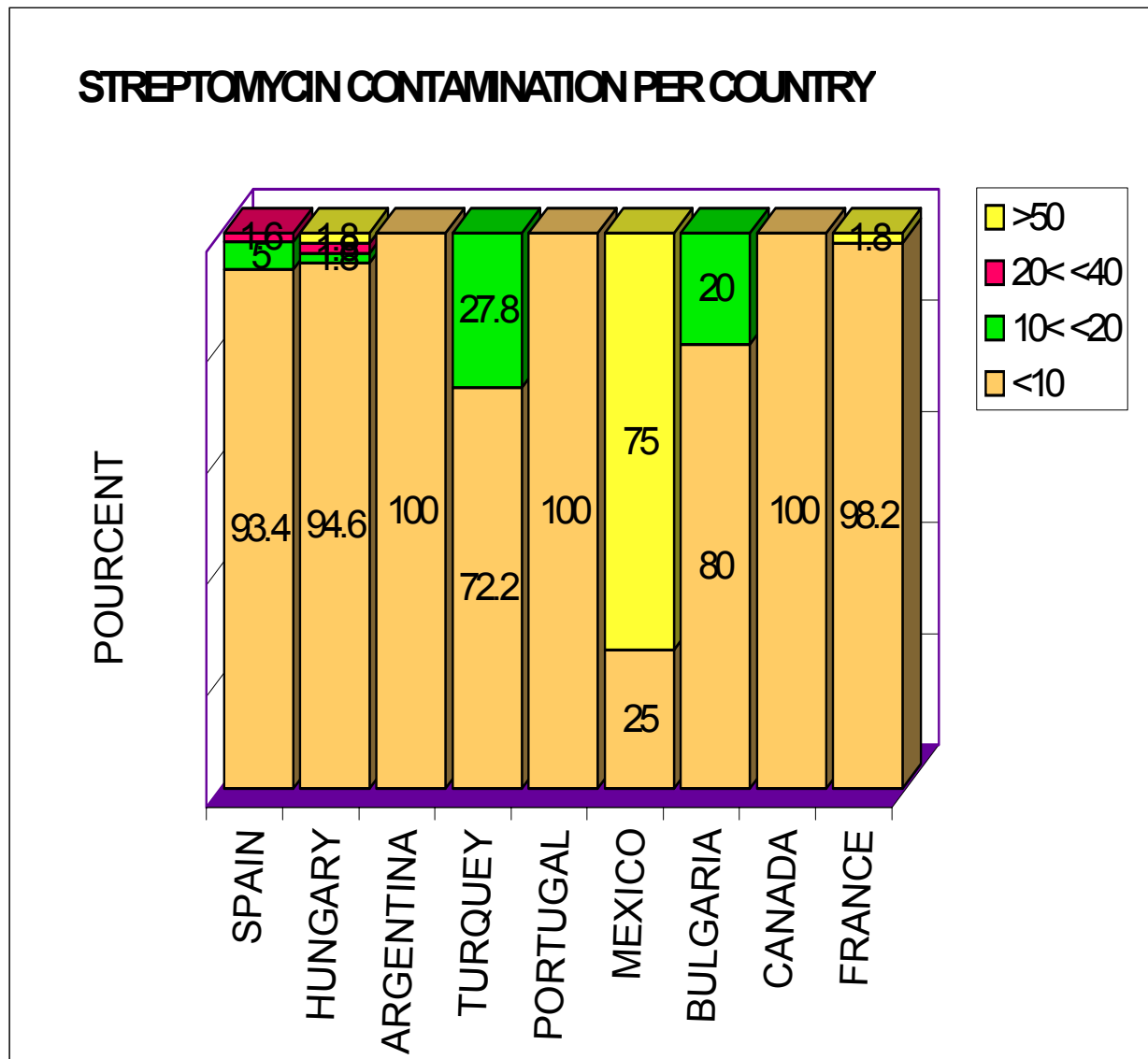
TETRACYCLIN CONTAMINATION PER COUNTRY



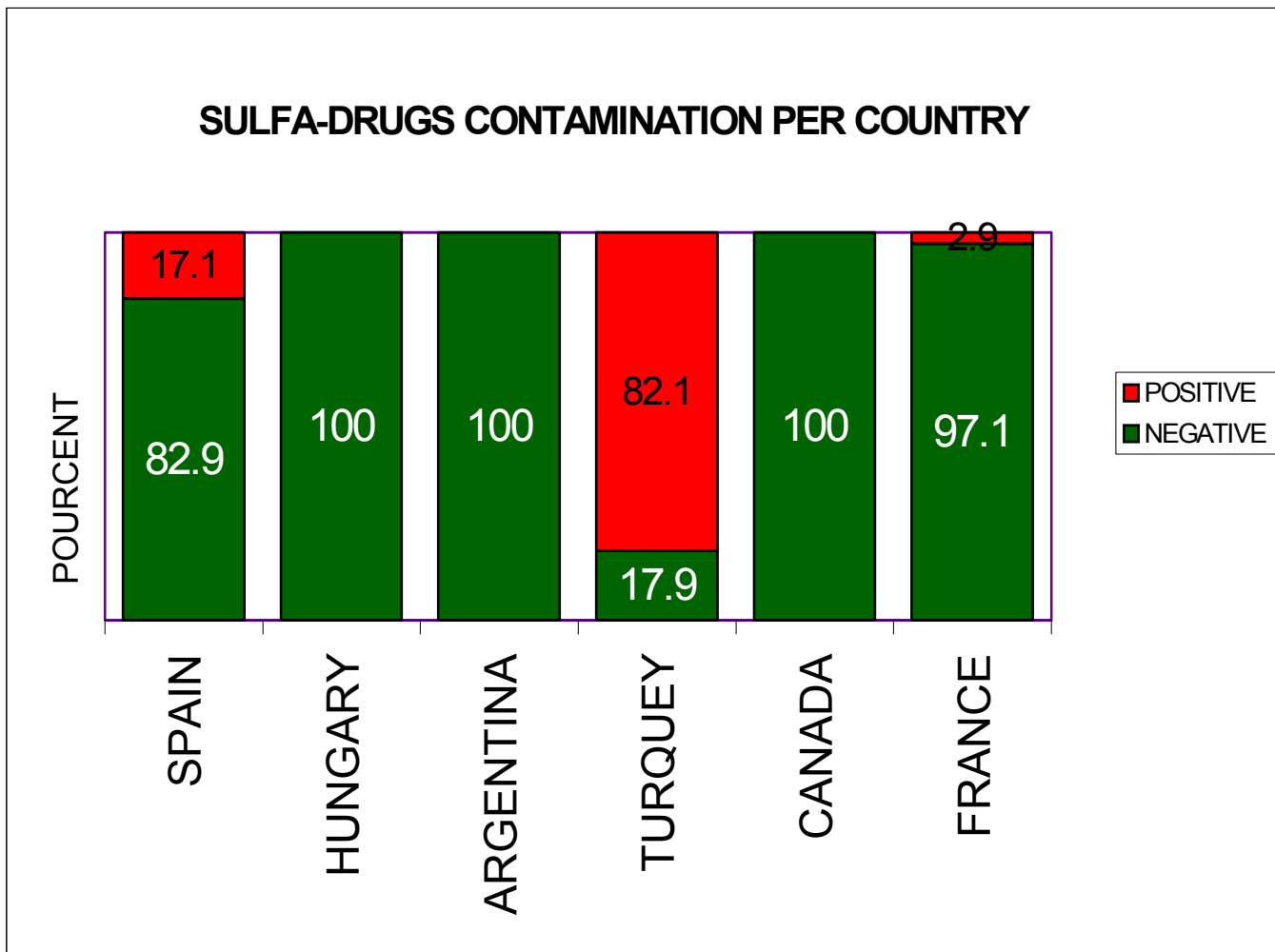
The value of the signal varied from 1000 ppb to 1500 ppb. The signal of scintillation depends of the botanical origin.

Several different origin honeys were contaminated with 10,20,30 ppb of tetracycline:

The signal of scintillation was not the same for a same contamination



For example, for negative heather the signal is 2100 and for negative acacia, it is 2850. The responses are also different for the contaminations 10, 20 or 30 ppb. It is the same report with streptomycin contamination.

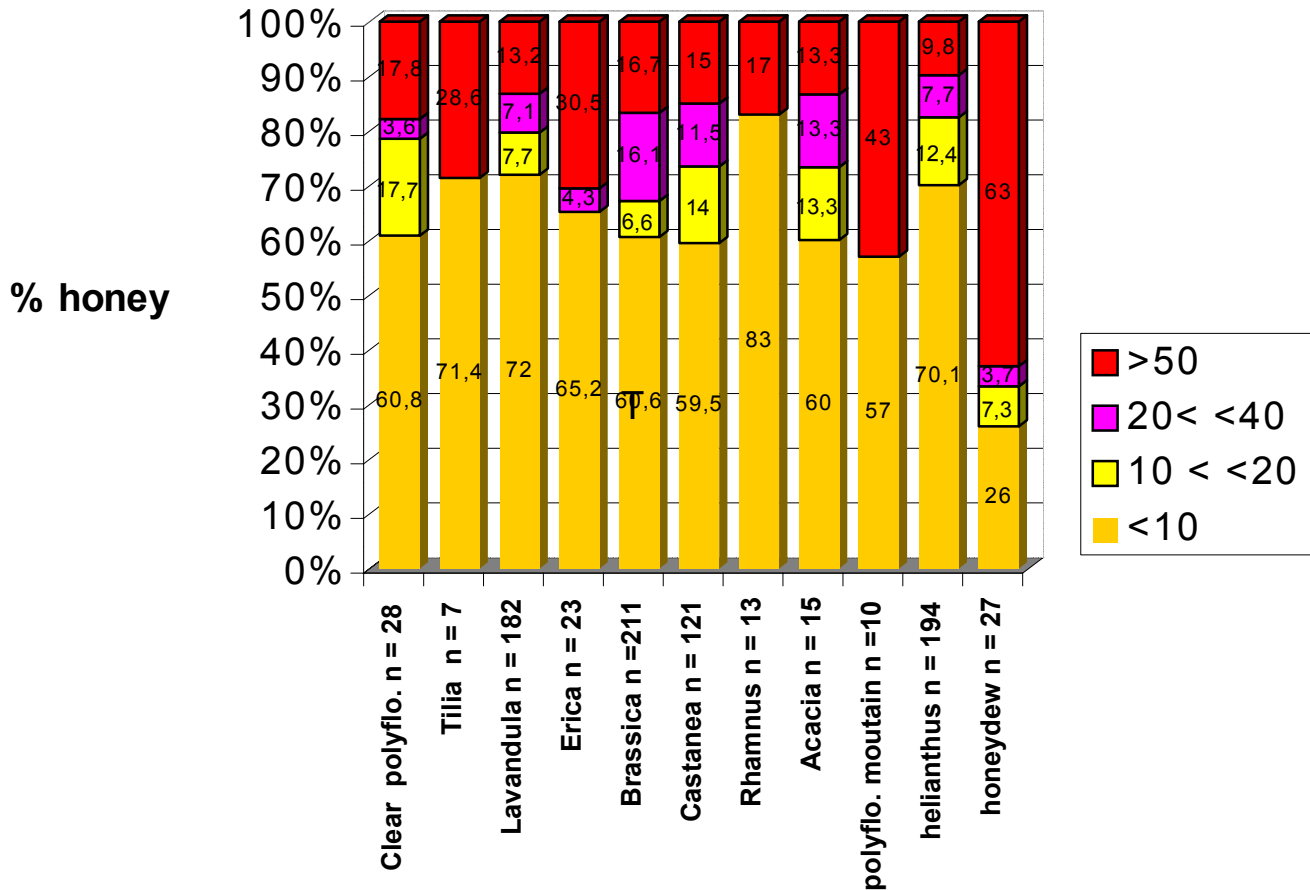


Different ranges of contamination per botanical origin are used to eliminate false positive and to refine the result.

When the contamination is over 30 ppb, charm system is overloaded, also different dilution permit to obtain a semi quantitative result. When the signal does not move after a dilution at 40, the level of contamination is higher than 80 ppb.

A lot of honeys have been tested per country and per botanical origin.

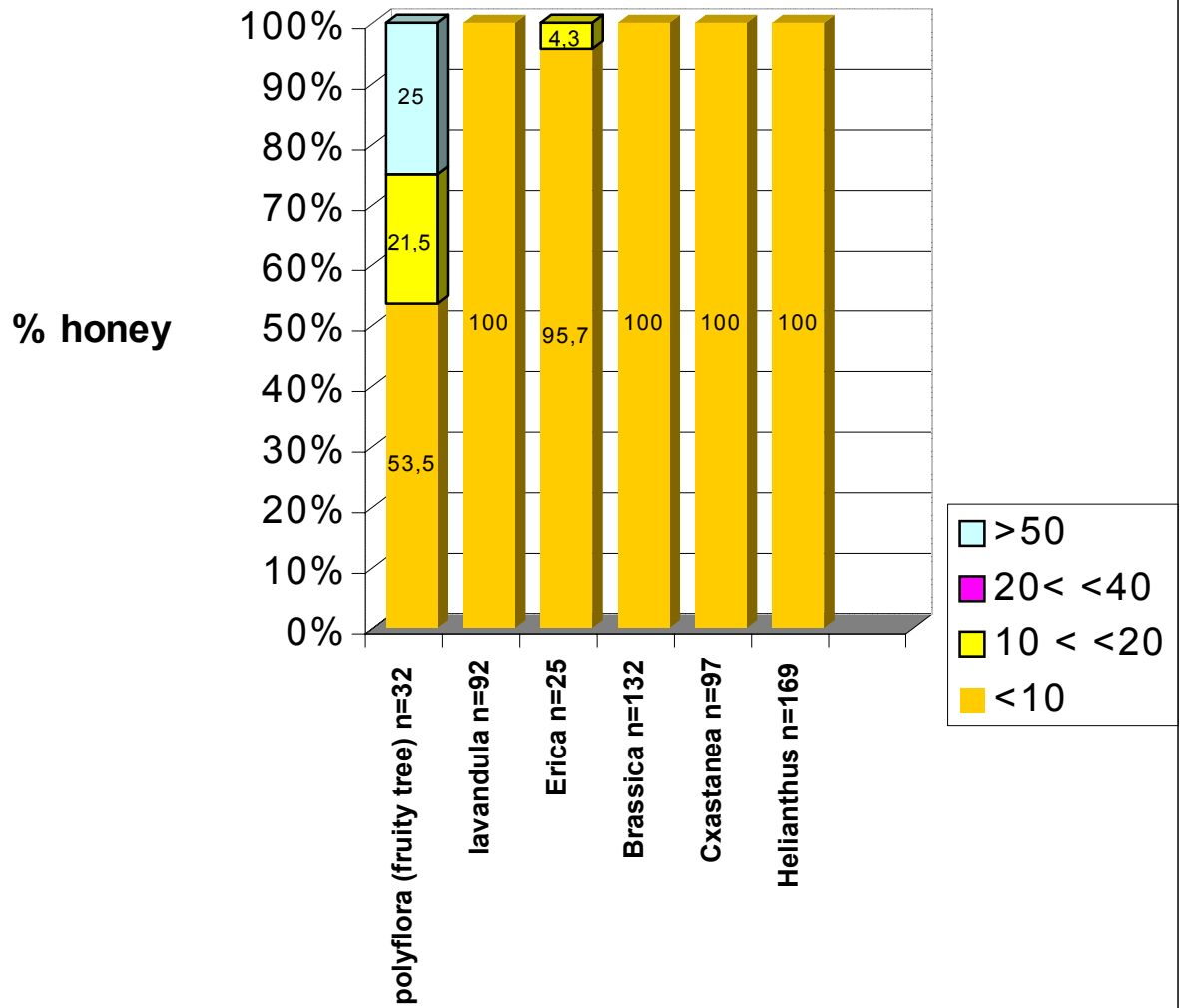
TETRACYCLIN IN FRANCE 2002



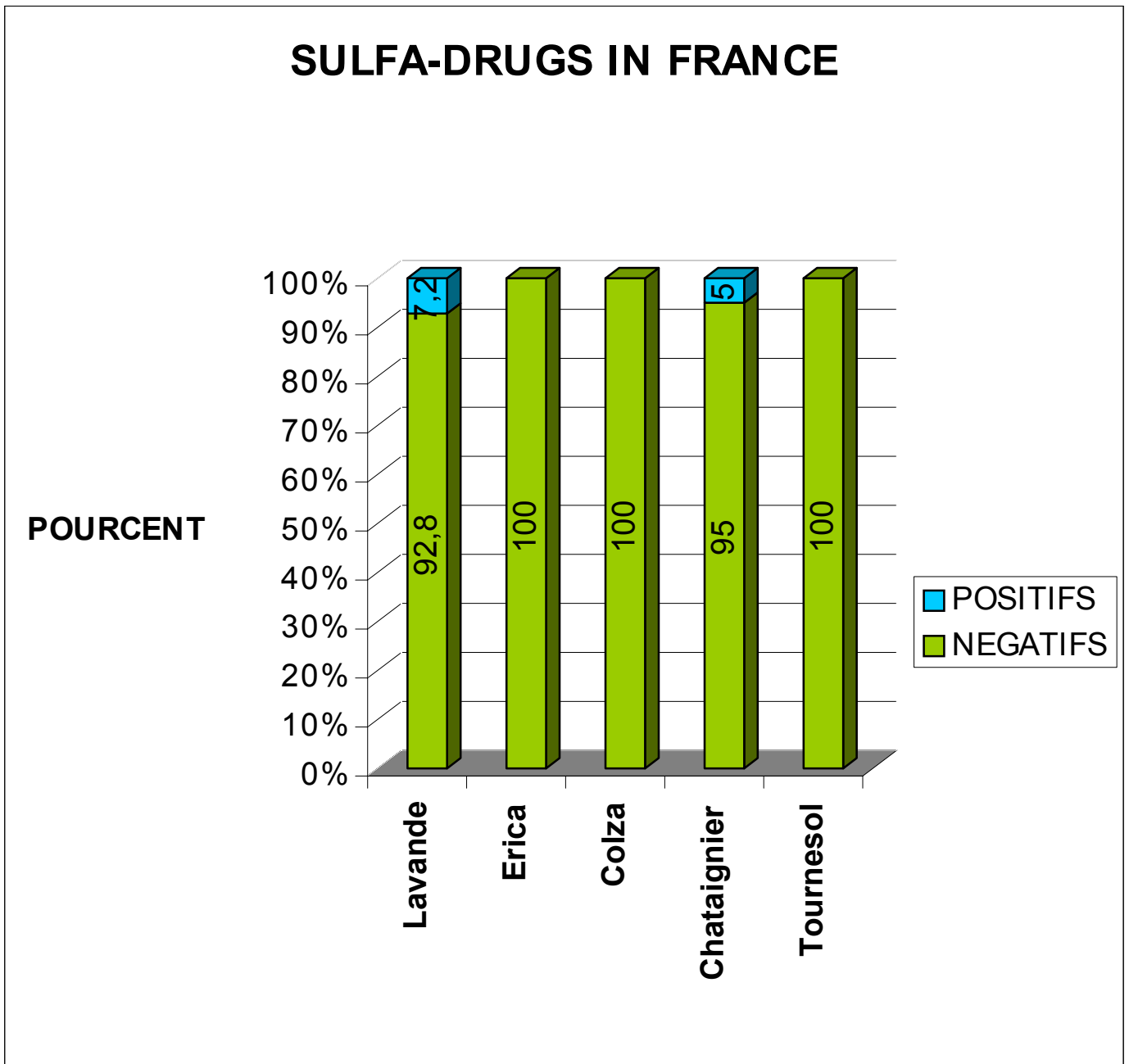
In France, all the different origin tested are contaminated by tetracycline residues.

Detectable residue tetracycline is not tolerated, but many beekeepers use to prevent the development of the mite;

STREPTOMYCIN IN FRANCE 2002



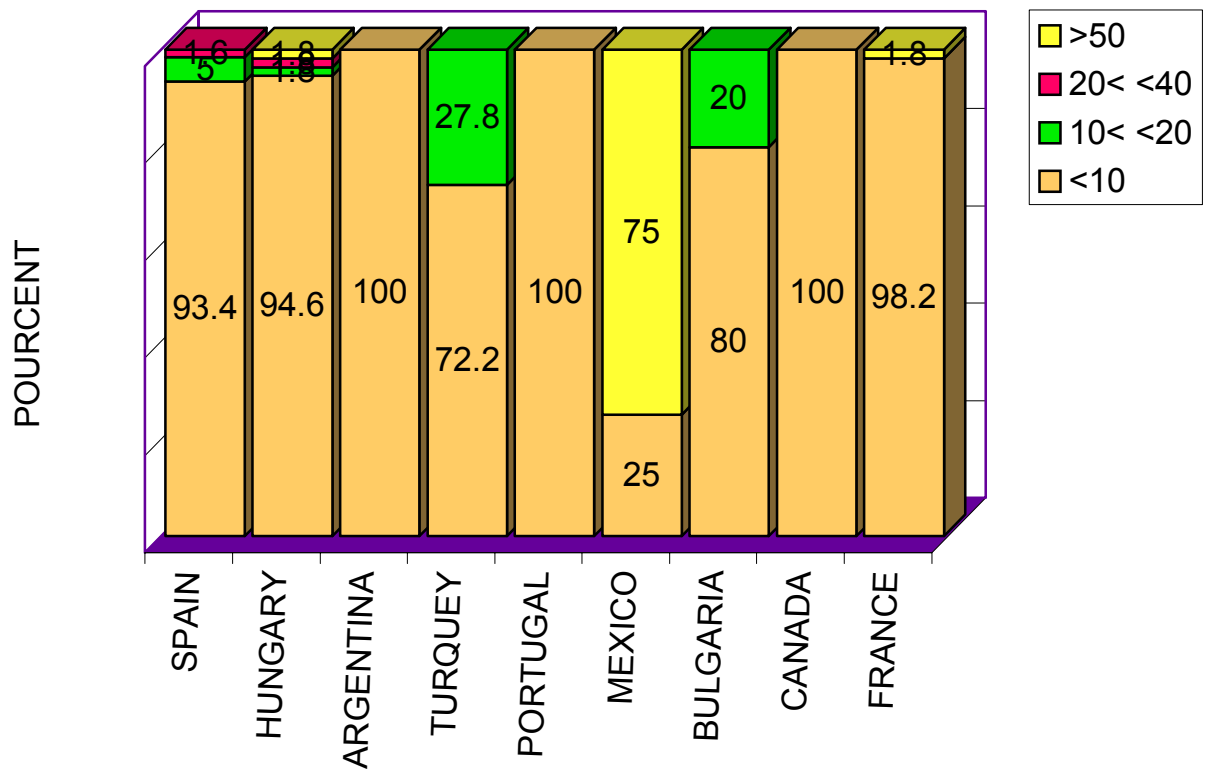
The mainly positive results are found on polyflora honey collected on cherry tree.



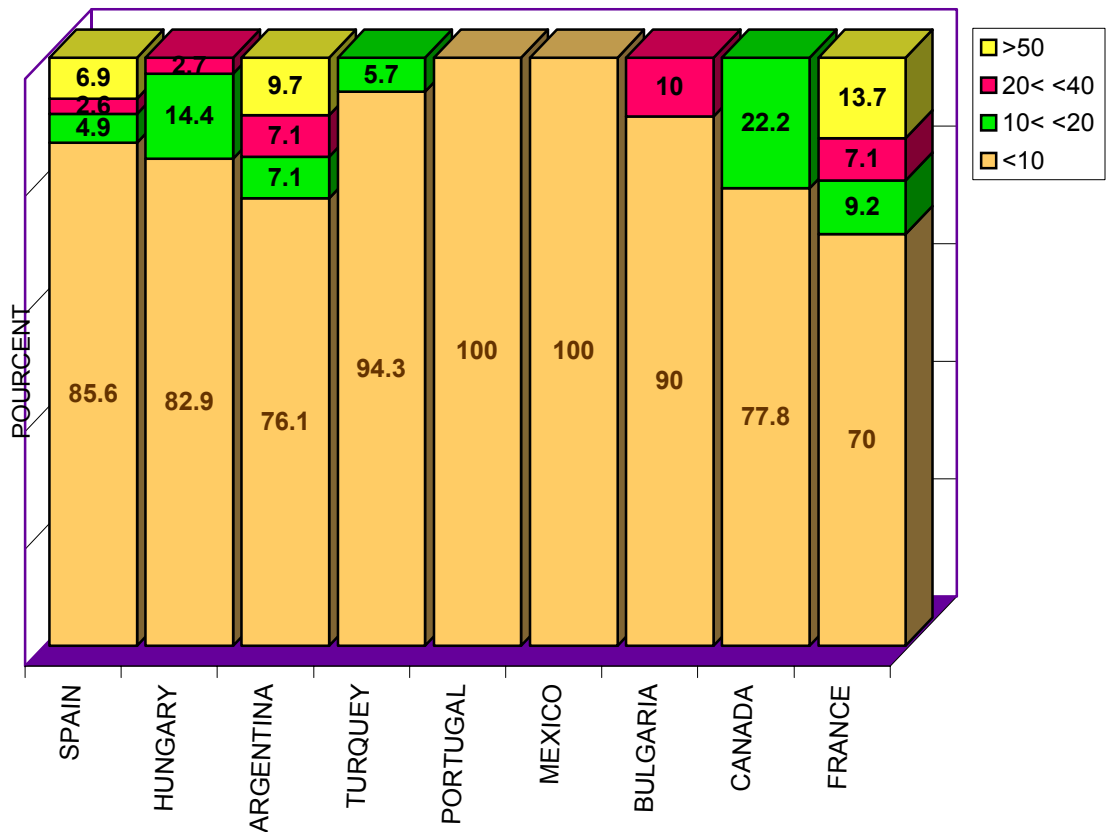
To buy honey from many countries, it was interesting to know which antibiotics is used in these countries and which is the rate of contamination.

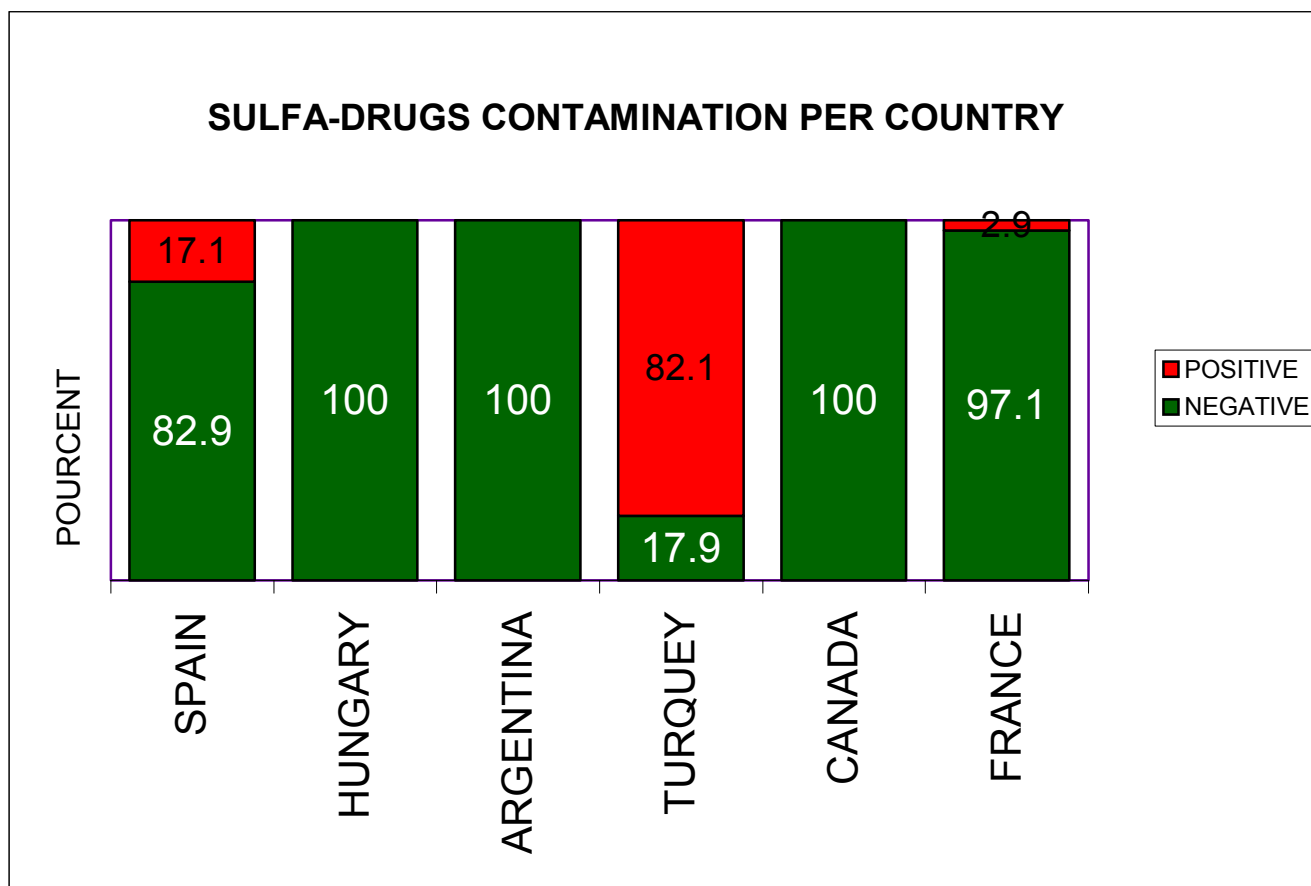
Many honey samples were analysed between April 2002 and September 2002.

STREPTOMYCIN CONTAMINATION PER COUNTRY



TETRACYCLIN CONTAMINATION PER COUNTRY





Conclusion

It is important to a company to know as soon as possible, if the raw material is without contamination before blend and packaging. Also, it is necessary to inform beekeepers with the risks to use antibiotic treatment.

Charm test is adapted to our industry, it is robust, reliable and rapid test;

With 2 Charm system, the laboratory is able to do 120 tests per day (chloramphenicol, tetracycline, streptomycin, sulphonamide) on raw material and packaging product.

Now, the Charm system is tested to screening on pesticides in honey. The Bernard Michaud industry wishes to protect the image of purity on its product and must offer to the consumer an healthy and pure honey.