

African tree yields promising bacterium

By Amélie Padioleau

A team of biologists at the French Institute of Research for Development (IRD) has isolated a new strain of the bacterium *Escherichia coli* from Shea cake, a by-product of the African karité tree. The bacterium could potentially be used to produce compounds valuable to the chemical and food-processing industries.

"One would never have thought of this bacterium for such a purpose," says Marc Labat, a member of the IRD research team, which specialises in microbial biotechnology.

Working jointly with scientists in Burkina Faso and Tunisia, and the French Agricultural Research Institute (INRA), his team discovered the new type of *E. coli* — a bacterium normally found in the stomach of warm-blooded animals. Analysis showed that this so-called C2 strain could transform toxic compounds (such as tannins) into non-acidic ones (such as phenol derivatives), which are of use to the food and chemical industries.

Genetically modified strains of *E. coli* are already used commercially to manufacture various proteins, such as insulin and growth hormones, and could be used in the food industry as preservatives. The C2 strain of *E. coli* is of particular interest to industrialists, as it could be used in similar applications but without the need for genetic engineering. Products resulting from its use could therefore be labelled as 'natural'.

The genetic origin of this particular C2 strain remains to be identified. "At present, we have two hypotheses," says Labat. "Either the part of the genome that displays this characteristic is present, but not expressed, in the normal strain. Or the wild strain has some extra elements in its genome."

Highly prized in the cosmetic industry, and having recently been approved as a substitute for cocoa butter in chocolate, shea butter is being used increasingly widely. But together with this growing demand is an increase in the residues resulting from processing. "The detoxifying potential of the C2 strain of *Escherichia coli* opens up the way to better management of these toxic wastes", says Labat.

Labat indicates that intellectual property rights could potentially be sought for the enzymatic activity of the new bacterial strain and, if this were to happen, his African colleagues would jointly own the patent. The public nature of this research will also enable scientists in the African countries involved to carry out related research projects. One possibility is that residues left over from processing other plants, such as peanuts, could be treated in a similar fashion.

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