



Can a link between the distaste of cilantro and genetics be proven?

Background

Coriandrum Sativa, or as it is commonly known, cilantro or coriander, is an herb which you either love or hate. The people that dislike it describe its taste and smell as foul: resembling the smell of soap och shampoo.

It is suspected that a certain SNP, a *single nucleotide polymorphism*, where *one* nucleotide is swapped, called *rs72921001*, is responsible for the vastly different thoughts when it comes to cilantro and there are two variants: an A and a C. The C-variant is thought to cause the soapy taste of cilantro.

The SNP is located around a cluster of *olfactory proteins*, that control our sense of smell. It is therefore obvious that it is in fact the *smell* of cilantro that makes people dislike it so much. There is a type of chemicals, called *aldehydes* in cilantro that are to blame for this. The SNP somehow alters the way these aldehydes react with the olfactory cells in our nose.

The point of this experiment...

...was to see if people in my surrounding possessed this genetic mutation, in an attempt to successfully link cilantro and genetics. A "taste-test", consisting of 40 people, was conducted for some quantitative data. In addition, a genetic analysis with a goal to prove that the mutation affects the olfactory perception of cilantro was made.

Method

The experiment was divided into five parts: the taste test, dna extraction, dna amplification, dna cleaving and a gel electrophoresis,

The taste test consisted of 40 subjects, under a blindfold, tasting a leaf from a fresh cilantro plant. Afterward each subject had to fill in three questions, stating if they liked the taste and what the taste resembled.

Three subjects, including myself, partook in the genetic analysis, beginning with dna extraction. A standard and simple method was used, and it is based on lysing cells from the inner cheek and eluting it with several buffers.

Afterward, a small piece of dna, with the SNP location in it, was to be amplified, in order to be able to conduct experiments with it. This is done

with a PCR, a *polymerase chain reaction*. It resembles the natural replication of dna that takes place in our body, in a controlled environment.

Now, the dna has to be cleaved and this is done with a *restriction enzyme*. These are specific for different combinations of nucleotides. The restriction enzyme used for this experiment was called AluI and it will only react if the C-variant of the SNP is present.

Lastly, a gel electrophoresis was done. It is a way to separate dna fragments based on their length. If the restriction enzyme cleaved the dna fragment, it would be shorter and thus, migrate further on the gel.

Results

The taste test showed that 17,5% (7 out of 40) *possibly* had the SNP rs72921001, comparing the odor with soap or shampoo.

All three that participated in the genetic analysis got the same result from the gel electrophoresis, but due to several complications, no concrete conclusion could be drawn.

Discussion

Unfortunately, no connection between genetics and the varying thoughts of cilantro could be proven with this experiment. There are several reasons for this.

The gel electrophoresis showed the same result from each of the three subjects. It does not prove that the restrictions enzyme AluI has done anything to the sequence.

The dna ladder that was included in the gel electrophoresis was defective. The point with having a dna ladder is to use it as a "reference", giving an idea of how long the fragments are. The ladder was not a ladder and rather a puddle of dye. Had the dna-ladder been proper, a conclusion could be drawn.

To improve this experiment in the future, more people could take part in the dna analysis. Selecting a few that *do not* show signs would also be a good idea. Another area of improvement would be to be more precise in pipetting reagents and similar things that if mishandled, could easily completely ruin the results of the experiment.