

## Bericht über die Kamerunexkursion 2012 mit Workshop

### Medical Entomology Workshop No. 3:

#### **ELISA: Serological recognition of *Onchocerca* antigens by calves, naturally exposed to *Onchocerca ochengi* transmission.**

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ELISA (Enzyme Linked Immunosorbent Assay) was one of the six practicals that were done during the workshop. The main idea here was to introduce the students to one of the laboratory techniques used in immunology.

#### **Venue:**

It took place at the Veterinary Research laboratory of the Institute of Agricultural Research for Development (IRAD-WAKWA) situated about 20 km from the University of Ngaoundere. After the normal lectures on Medical Entomology, the students were brought by local transport (car and motorbikes) to the laboratory.

#### **The practicals proper:**

This was divided into two parts: the first part consisted of about 20- 30 minutes of lecture. In this lecture I introduced the idea of ELISA to the students, explaining the theory and the role of the various reagents and test materials (sera samples, recombinant proteins and secondary antibodies, etc). Next, I explained the step by step procedure following the protocol I have distributed. Our principle was to test if calves that have been naturally exposed to *Onchocerca ochengi* will specifically produce antibody responses (IgM, IgG1 and IgG2) against recombinant proteins derived from cDNAs of *Onchocerca volvulus*. Here we compared sera of exposed local calves against sera of European cattle. Our test proteins were: *Onchocerca ochengi* adult worm lysate (positive control), Ov-SOD (Superoxide dismutase, = Ov 103) and Ov-MIF-2 (Macrophage migratory inhibitory factor-2, = Ov NLT-1) acting as our test proteins.

In the second part, each student was made to perform each step of the procedure (be it coating of the plates, washing, serial dilutions etc.. Next the students were explained how the ELISA reader functions and after the readouts, titres were defined and calculated together. A rough histogram was made to clearly show our results (some sheets attached).

However, since a standard ELISA procedure normally takes 2-3 days meanwhile we had just 4-5 hours every day for each group, the most important sections of the assay were demonstrated during this period. This was facilitated by our technical staff who did some of the procedures in the morning. To facilitate the exercise for the next group, each group did the coating of the plates for overnight incubation for the next group.

At any stage of the exercise, students interrupted by asking questions on any issues that needed clarity.

#### **General observations:**

**(a) General impression:** The students expressed the wish that they would have liked to receive lectures on immunology and not just ELISA practicals. There were words

(recombinant proteins, antibodies, titre values, Bradford, ELISA plates, serial dilutions etc.) that some students were hearing for the first time. Not everything could be explained in just 4-5 hours. Some students (mostly Cameroonians) were happy to have interacted with their German counterparts of biology and had the opportunity to share some ideas.

- (b) Teaching experience:** The practicals gave me an experience to explain some of the things I have learned during my stay in the faculty of biology of the University of Münster and at the Bernhard Nocht Institute for Tropical Medicine in Hamburg-Germany. From these practicals, I have started imagining how the teaching exercise will be when I eventually finish with the Ph.D thesis and I will then have to contribute new knowledge to Cameroonian students.
- (c) Should it be continued:** It was the entire wish of all the Cameroon students that such teaching opportunities should be accorded more often. Some proposed having such workshops every year.
- (d) Capacity building:** Some students expressed the wish that they should be given the opportunities to visit German universities and appreciate the differences that exist with the Cameroonian universities and of course have the opportunity to learn new techniques.
- (e) Support IRAD expects from their German partners:** IRAD is expecting that after a DFG funded project of this magnitude, they should have some equipment and reagents they can present to the institute as fallouts of the German-Cameroon Cooperation. Such equipments and reagents are particularly important because our country can get them only through co-operations of this nature. There are situations when even the institute has money to buy they encounter difficulties purchasing some of them because of bureaucratic and at times custom regulations. Such instruments and materials are particularly needed for us to train our own students once in a while or just to do some routine laboratory work. We have a situation in our country where some master students virtually finance their research projects from their pockets. Absence of basic materials like Eppendorf pipettes or falcon tubes, etc. can keep a procedure or an experiment for months. Some of us have benefitted from reagents and materials acquired from other funded projects over the years and the little scientific experience we have acquired has come from such funded projects that existed before we were recruited into the institute or that actually ongoing with funding from different bodies.

**It is worth saying here that following the last recruitment of 25.000 young graduates by the Cameroon government the Veterinary Research Laboratory of IRAD-Wakwa now has two new staff. A researcher with biochemistry background and a technician with a degree in biology (graduated from the University of Ngaoundere). It is the responsibility and obligation of those of us that have stayed in the lab a bit longer to groom and train them to be useful to the country in future. These new staff will particularly like to start off with the existing projects like what we now have. One of the newly recruited staff (Darma Vincent) participated actively in the Medical Entomology Workshop and presented a workshop report to the regional centre of Scientific Research and Innovations (Adamaoua region).**

PHOTOS:



DFG-study animals near the river



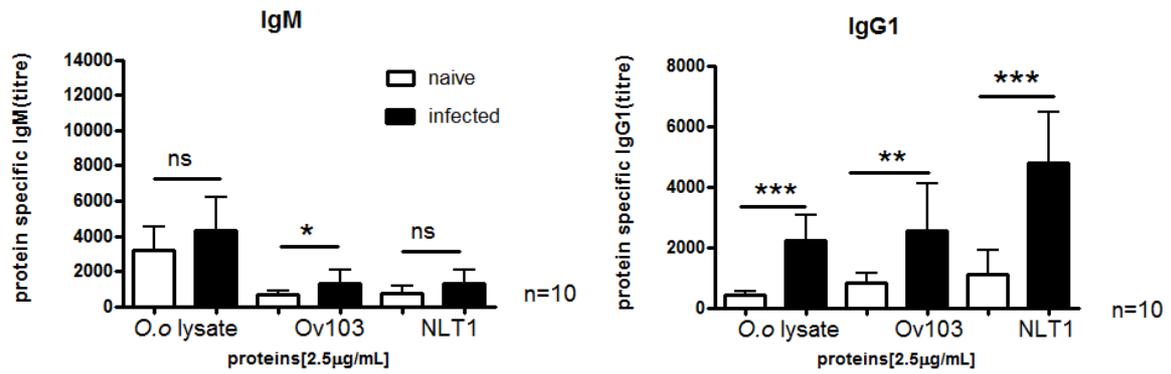
collecting blood samples from the animals



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Students during the EILSA workshop



**ELISA-Results:** Recognition of *Onchocerca* worm proteins (adult *O. ochengi* lysate, recombinantly produced Ov-103 and Ov-NLT1) by IgM and IgG1 from sera of naïve (European cattle) and local *Onchocerca*-infected cattle, that are exposed to natural transmission near a *Simulium* breeding river. Obviously, local cattle naturally infected with *O. ochengi* reacted strongly and had very significantly elevated titres of specific IgG1 antibodies in their blood.