Cancer cells are genetically unstable and produce abnormal proteins which, for various reasons, are not eliminated by the immune system. Due to this instability, the abnormal proteins are not always the same from one patient to other and can change all along the natural history of the disease. This is the rationale for a customized immunotherapy in order to match the antigenic evolution of the tumor.

We used a protocol of autologous immunotherapy containing hydroxylapatite particles associated to autologous tumor proteins in order to treat two high grade mast cell tumors.

**Materials and methods:**

**Vaccine:**
The vaccine is made from a tumor biopsy. It is composed of heat shock proteins for its antigenic part and of hydroxylapatite (HA) particles as adjuvant. Heat shock proteins (HSPs) produced in large amounts by cancer cells are purified by adsorption chromatography on hydroxylapatite micro/nanoparticles (Fig. 1).

HSPs are chaperone molecules produced when cells are submitted to a stress and aimed to stabilize the peptides that they chaperone during the period of stress. Purifying these molecules allows getting a fingerprint of the proteins synthesized by the cells. They also have a role in the presentation of their associated peptides by the presenting cells and thus in the immune survey of transformed cells.

Once loaded by these chaperone proteins extracted from a tumor biopsy, the HA particles are injected in the patient subcutaneous tissue. The nanoparticles are used as the solid phase of the chromatography and adjuvant of vaccination.

It was demonstrated that CD8 cells were cross-primed against the proteins carried by the nanoparticles (Fig. 2). These proteins were ligand of cd91 on the antigen presenting cells.

**Results:**

**Dog 1:** A 13 year old dog (Weimaraner) suffering from a grade III mast cell tumor at the basis of the tail without any sign of dissemination was operated for the first time preserving cutaneous margins around the tumor (fig 3, 4).

**Dog 2:** A 11 years old dog (Labrador) suffering from a grade II mast cell tumor in 2 locations: periumbilical region (1x1.5cm) and neck (1.5x2cm). A surgery was performed on the neck lesion while the peri-umbilical tumor was not operated.

For both dogs the treatment schedule was at least one dosis /week for one month and one dosis / month for 4 months.

**Discussion and conclusions:**

This kind of autologous immunotherapy can be used for the treatment of mast cell tumors. We did not see any secondary effects, the dogs keeping a normal activity during the treatment.

This is a simple way (the dosis preparation takes about one hour) to restore immunity against the tumor cells. Dog 1 showed that changing the vaccination schedule and increasing the frequency of vaccination could trigger an immunity even when there was a resistance.