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Kurztitel: **Host-parasite relationship in the system Alpine swift/*C. melbae***

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zu Ziff. 54 "Andere Herkunft" beschreiben und Anzahl der betroffenen Tiere angeben

The Alpine swift is a wild migratory bird, and I studied one swift colony located under the roof of a clock tower (Bieltor) in Solothurn.

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zu Ziff. 73 Verwendung der überlebenden Tiere nach Ende des Versuchs beschreiben und Anzahl der betroffenen Tiere angeben

32 chicks of the 36 experiment broods fledged in the end of August.

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8 **BEURTEILUNG DES VERSUCHS** (Beschreibungen und Anmerkungen zu den Ziff. 81 - 85)

**Effect of corticosterone implants on the development and immunity of Alpine swift nestlings**

To assess the effect of stress hormones on nestling development and immunity, I used silicate pellets filled with corticosterone (hereafter referred to as "cort"). These pellets were provided by Innovative Research of America (ref G-111: dosage 25mg and 7 days release) and they were designed to release a constant amount of cort in the blood over a period of 5 to 7 days so that levels of circulating cort in the plasma are elevated by 10-20ng/ml. At day 37 after hatching, we implanted 18 pairs of sibling with either a cort pellet ("cort nestlings") or a placebo pellet ("control nestlings"). In broods of three nestlings, I restricted my treatment to the two larger siblings as measured by the size of their wings. The pellet was introduced subcutaneously on the left side of the abdomen, and I took care to seal the incision in the epidermis with a chirurgical adhesive (Histoacryl® Tissue Adhesive: blue, N-butyl-2-cyanoacrylate; Am Aesculap AG & CO) after implantation so that the pellet can not accidentally fall out.

The major experimental findings were (see also the handout provided in appendix):

Cort implanted nestlings lost body mass, grew their wings and sternum at lower rates, and fledged one week earlier compared to placebo nestlings.

Cort implanted nestlings had a lower response against PHA than placebo nestlings. The two groups were similarly infested by the blood sucking louse-fly *C. melbae*.

Red cells of cort implanted nestlings were less resistant to a controlled free radical attack than red cells of placebo nestlings.

One important drawback of this experiment however was that, conversely to my first aim which was to elevate nestling circulating cort to 10-20ng/ml, it seems that the implants provided by Innovative Research of America were over-dosed. Indeed, in collaboration with Dr Lucas Jenni and Dr Susie Jenni-Eiermann at the Swiss Ornithological Station, in January 2007 we analysed circulating cort levels of experimental nestlings at 4 days after implantation and we found that cort nestlings had acute (>100 ng/ml) rather than moderate (10-20 ng/ml) levels of circulating cort. After discussion with Dr Jenni and Dr Jenni-Eiermann, I learned that they also had problem in the past with over-dosage of cort implants. The problem may come from the fact that the first use and calibration of these pellets is done with laboratory rodents (mice and rats), and thus there might be large variation in cort release when these pellets are used in birds since birds and mammals do not have the same metabolic load. Although Dr Jenni and Dr Jenni-Eiermann are also using implants from the Innovative Research of America, the implants they are using nowadays to create moderate elevation of circulation cort in the plasma contained much lower cort doses than the one provided to me by the same company. Note that we found no differences in circulating cort levels between nestlings implanted with a placebo and siblings that have not been implanted, suggesting that the implantation protocol *per se* had no health consequence for the birds. Thus, the negative side effects of the experiment I carried out in 2006 seems thus to be due to the use of over-dose cort implants provided by Innovative Research of America. This is a very sad and regrettable mistake that I could not do however much to avoid it.

In summer 2007 I plan to redo this experiment with a smaller number of young (6-8 young in each group) and with lower cort dosages in order to assess the effects of moderate levels of cort on nestling development, immunity and age at fledging. In agreement with previous emails, I will contact the Veterinary Services when I will carry out the first implantation in 2007 so that your Services can assess the method. I will also further discuss the method with Dr Jenni at the Swiss Ornithological Station to avoid any other methodological pitfalls.