CAMPYLOBACTER – AN EXTRAORDINARY INTESTINAL BACTERIUM

This edition of the European Journal of Microbiology and Immunology is devoted to an extraordinary intestinal bacterium. Not only has *Campylobacter* outnumbered *Salmonella* as the most prevalent bacterial pathogen causing diarrhoea, but it also differs from other enteropathogenic bacteria in its epidemiology, its peculiar cell surface glycans, and its absence of typical virulence factors, such as enterotoxins.

Whereas infection of humans in developed countries is symptomatic irrespective of age in most cases, data from sub-Saharan Africa indicate that symptoms are mainly present in children, whereas frequent exposure might lead to asymptomatic colonization of adults. This raises questions such as whether differences in lifestyle, especially eating habits, more frequent exposure, and premunitive immunity in developing countries, or just strain variations are possible factors being involved. The identification of metabolic preferences and chemotaxis allowed the identification of new biological markers which might make source tracking become feasible in the future.

However, it is still unclear as to why *Campylobacter* has become such a prevalent bacterial enteropathogen especially in developed countries. Is it because we eat more poultry, is it because the technique of slaughtering (poultry hang with the cloacae on top) might lead to fecal contamination of the body skin, or is it simply because diagnostic techniques have improved over time? The recent finding of coccoid forms of *Campylobacter* also points to the questions on how *Campylobacter* is responding to environmental stress factors and whether the trend of global warming has changed only our leisure behaviour or has it also increased the burden of *Campylobacter* in the environment.

Equally important is the fact that *Campylobacter* can frequently be found in the intestine of its natural reservoir, such as poultry and other animals. Knowing that the optimal growth temperature for *Campylobacter* is above 40 °C makes it understandable that this bug prefers to colonize the avian intestine, since birds have such a high body temperature. This, however, raises another interesting question: do different strains circulate in birds, mammals, and the environment, and does the temperature regulate the expression of virulence-associated factors, and if so, which bacterial factors have to be focused on?

In this regard, the development of innovative murine animal models will facilitate our understanding of the pathogenesis of campylobacteriosis. It has recently been shown that the composition of the gut flora as well as the composition of food made colonization-resistant mice become susceptible to *Campylobacter* infection. These *in vivo* models provide a great chance to significantly improve our understanding on what determines virulence of *Campylobacter*.

Some of the most important European scientists working on *Campylobacter* came together in October 2011 at the *CampyGerm's Campylobacter Conference** in Göttingen/Germany to discuss these and other questions. Some of the presented data are published here. It is hoped that this extraordinary bacterium will attract more scientists to decipher its multiple secrets and to open up new doors that finally will allow better prevention, control, and management of *Campylobacter* infection of man and animals.

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