

READERS' OPINION

Final comments on an interesting taxonomic dilemma: *Leishmania infantum* versus *Leishmania infantum chagasi*

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Dear Editor,

It is grateful to see that the new session "Readers' opinion and discussion" created after my comments – "*Leishmania infantum* versus *Leishmania chagasi*: do not forget the law of priority" (Dantas-Torres 2006) – on the concise review article of Lainson and Rangel (2005) has emerged as the basis of an interesting debate on the aetiological agent of American visceral leishmaniasis, i.e., the taxonomic dilemma concerning its correct nomenclature. Further details of this discussion can be found elsewhere (Dantas-Torres 2006, Lainson & Rangel 2006). Recently, I was surprised (and very happy as well) to see the welcome contribution of Professor Jeffrey Shaw, a world-leading expert in the field of leishmaniasis. Dr Shaw is a respected reference in classification of leishmanial parasites and I must agree with most of his comments. However, I would like to write my last few words on this matter. In fact, as Lainson and Rangel (2006) previously emphasized, the name *Leishmania infantum chagasi* entirely follows the rules of the International Code of Zoological Nomenclature. That is correct, but the point is: Is this name according to the current criteria used to classify parasites of the genus *Leishmania*? What are the criteria?

Among the techniques currently in use for classification of leishmanial parasites are: isoenzyme electrophoresis (WHO 1990), species-specific monoclonal antibodies, DNA probe and analysis of restriction fragment length polymorphism (RFLP) using different DNA sequences as targets (Macedo et al. 1992, Guizani et al. 1994, Mendonza-Leon et al. 1995). As Shaw (2006) commented, recent studies on the Old World visceral parasites using the internal transcribed spacer (ITS) (Kuhls et al. 2005) and fluorogenic assays (Quispe-Tintaya et al. 2005) suggested the need for a taxonomic revision of *Leishmania donovani* complex. It is clear that the current status of certain *Leishmania* species (e.g., *Leishmania archibaldi*) need to be revised (Mauricio et al. 2006).

I have the modest opinion that we should first re-establish (i.e., update) the criteria for the classification of the leishmanial parasites based on the traditional criteria (Lainson & Shaw 1987) and data from recent molecular investigations. Then it would be easier to agree if a given parasite deserves the status of species or subspecies. But what is a subspecies? In the first chapter of the memorable book *The Leishmaniases in Biology and Medicine*, Lainson and Shaw (1987) defined subspecies as "local, geographically isolated populations which show some (usually minor) taxonomic differences from other geographically separated populations of the same species". If we take this definition into account, I should agree that the classification of the aetiological agent of American visceral leishmaniasis as *Leishmania infantum chagasi* is acceptable. The challenge will be to convince other researchers who do not believe that exist taxonomic differences (even minor) between the aetiological agents of visceral leishmaniasis in the Americas and the Mediterranean basin.

Henceforth, I would be happy to see in the current literature the use of a single designation for the aetiological agent of American visceral leishmaniasis. Unfortunately, different names are currently in use, such as *Leishmania chagasi* (Berman 2006), *Leishmania infantum* (Moraes-Silva et al. 2006), *Leishmania infantum chagasi* (Lainson & Rangel 2005), *Leishmania chagasi/infantum* (Felicangeli et al. 2005), *Leishmania infantum (chagasi)* (Bern et al. 2005), and even *Leishmania (chagasi) infantum* (Barrouin-Melo et al. 2006); and this is scientifically unacceptable. I hope this debate initiated by a young 'leishmaniac' and properly complemented by respected experts in the field of leishmaniasis (Dr Lainson, Dr Rangel, and Dr Shaw) will help researchers who are direct or indirectly involved with taxonomy of leishmanial parasites. Finally, I would like to emphasize the importance of assign a single name for the aetiological agent of American visceral leishmaniasis, which appears to be losing its identity but not its virulence (Dantas-Torres 2005, Dantas-Torres & Brandão-Filho 2006).

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