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**ePoster Session**  
**Clinical parasitology news**

**Sulfadiazine resistance in *Toxoplasma gondii*: transcriptomic approach**

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**Background:**

*Toxoplasma gondii*, the causative agent of toxoplasmosis, is a protozoan parasite that is estimated to infect more than one-third of the world's human population. Active drugs against *T. gondii* are mainly represented by the inhibitors of folic acid synthesis: sulfadiazine and pyrimethamine. In clinical practice, therapeutic failures and relapses are observed.

**Material/methods:**

In order to better understand the mechanisms of resistance to sulfadiazine in *T. gondii*, we have analysed the expression levels of seven folate transporter genes (FBT family) [1], eleven ABC transporter genes [2], and fourteen enzyme genes which are implicated in folic acid synthesis. This study by real time RT-PCR focused on sensitive strains (RH and ME-49), natural resistant strains (TgH 32006 and TgA 103001) [3], and induced resistant strains (RH-R<sup>SDZ</sup> and ME-49-R<sup>SDZ</sup>) [4].

**Results - Conclusions:**

The transcriptomic analysis of various *Toxoplasma gondii* strains has highlighted in resistant strains an overexpression of folate transporter genes, ABC.C2 transporter gene, and FPGS (folylpolyglutamate synthase) gene. Overexpression of these genes would allow the survival of parasite, by the internalization and the sequestration of folate, and the efflux of sulfadiazine. Furthermore, the potential involvement of folate transporters in drug resistance could, in the long term, raise the question about the systematic administration of folic acid, which could potentially enhance the parasite's survival.

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[2] Sauvage, V., Aubert, D., Bonhomme, A., Pinon, J.M., Millot, J.M. (2004) P-glycoprotein inhibitors modulate accumulation and efflux of xenobiotics in extra and intracellular *Toxoplasma gondii*. *Molecular and Biochemical Parasitology.* **134**, 89-95.

[3] Meneceur, P., Bouldouyre, M.-A., Aubert, D., Villena, I., Menotti, J., Sauvage, V., Garin, J.-F., Derouin, F. (2008) In vitro susceptibility of various genotypic strains of *Toxoplasma gondii* to pyrimethamine, sulfadiazine, and atovaquone. *Antimicrob. Agents Chemother.* **52**, 1269-1277.

[4] Doliwa, C., Escotte-Binet, S., Aubert, D., Velard, F., Schmid, A., Geers, R., Villena, I. (2013) Induction of sulfadiazine resistance *in vitro* in *Toxoplasma gondii*. *Experimental Parasitol.* **133**, 131-136.