

SHORT COMMUNICATION

### Spiroplasmas from European Tabanidae

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Spiroplasmas (Class: Mollicutes) are motile prokaryote bacteria with no cell-wall, showing helical morphology in their exponential growth phase. They have been found in association with a variety of insects and plants and are classified into some twenty-four groups based upon serological affinities (Tully *et al.*, 1987; Williamson *et al.*, 1989). A rich diversity of spiroplasmas has been isolated from Tabanidae in the U.S.A. (Hackett & Clark, 1989), but there are no such records from other countries.

Some spiroplasma species have been implicated as potential causative agents of degenerative central nervous system disorders, such as Creutzfeldt-Jakob disease of man (Humphery-Smith & Chastel, 1988; Chastel & Humphery-Smith, 1990). Whether or not these bacteria represent a potential health risk to man and domestic animals requires clarification. We report here the first isolated of tabanid spiroplasmas (tsp) from the Palaearctic region.

Tabanid flies were collected during July 1989 from the 'Forêt de Paimpont' in Central Brittany, Western France. Specimens were caught by hand-net when flies were attracted to wet black umbrellas placed in sunny areas. They were identified immediately, then placed individually in tubes and held on dry ice in the field prior to storage in liquid nitrogen. Spiro-

plasma isolation procedures followed those previously described for mosquito spiroplasmas (Chastel *et al.*, 1990). Briefly, flies were processed individually and both external washings and whole body homogenates were filtered (0.2 µm) and inoculated into SP4 spiroplasma growth medium. Isolates were triple cloned and characterized serologically, using a one-way deformation test (DT) (Williamson *et al.*, 1978), against the following fifteen 'grouped' and 'ungrouped' antisera representative of known nearctic tsp serogroups, bee and mosquito spiroplasmas: I-2, IV (B 31), IV (SR 3), XIII, XIV, XVI, XVIII, XXII, XXIII, HYOS, TABS 1, TABS 2, TASS, TAAS and TAUS. Tsp antisera were kindly supplied by Dr J. G. Tully, National Institute of Allergy and Infectious Diseases, Frederick, Maryland, U.S.A. The maximal DT titre was noted for each cloned isolate along with any cross reactivity and the morphology of colonies on solid SP 4 medium.

From a total of thirty-nine tabanids examined, nineteen isolations of tsp were achieved. Of these, thirteen were successfully triple cloned and characterized. These results are summarized in Table 1 and define at least six serological profiles and one unreactive strain (HP-140).

These spiroplasmas represent the first tsp isolations from European Tabanidae and include host records from seven different tabanid species. In general palaearctic tsp are closely

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**Table 1.** Provisional characterization of thirteen strains of tabanid spiroplasmas from France (1989).

Host		Strain characterization				
Subfamily	Species	Strain designation	Main serological reactivity*	Cross reactivity*	Type of colony on solid medium†	
Deer flies (Chrysopsinae)	<i>Chrysops viduatus</i> Fab.	CP-148	gr XIV	HYOS	A	
	<i>C. caecutiens</i> (L.)	CC-159	HYOS	TAUS, gr XIV, SR 3	A.	
Horse flies (Tabaninae)	<i>Tabanus bromius</i> L.	TB-44	TAAS	O	B	
		TB-106, TB-107	gr XIV	HYOS	A	
		TB-110, TB-116				
		TB-119				
	<i>Tabanus sudeticus</i> Zeller	TS-153, TSD-154	gr XXIII	O	A	
	<i>Tabanus bovinus</i> L.	TB-165	TABS I	TABS 2	A	
<i>Hybomitra bimaculata</i> (Macg.)	HB-161	gr XIV	HYOS	A		
<i>Heptatoma pellucens</i> (Fab.)	HP-140	gr VIII	O	C		

\* Using fifteen 'grouped' and 'ungrouped' antisera.

† A=large, white, satellites; B=small, white, satellites; C=small, yellow centre, satellites.

related to their nearctic counterparts and exhibit the same antigenic complexity and intergroup cross reactivity.

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