Brucella melitensis [Brucel] and Melitococcinum [Melit]

Introduction.

141 symptoms of Brucella melitensis from provings and clinical use over 18 years; comparison with Melitococcinum (Melitine); observed symptoms during 1977 at 1995.

Collected by Phou SOUK-ALOUN and Claudie PEPEY; 6 avenue d'Emmanuel d'Alzon; F-30120 Le Vigan (France); phone (33)67811177 fax (33)67817449.

Physician in the "Cévennes" (Southern France, department of Gard), area of high prevalence of brucellosis, starting from before 1977 I looked for efficacious remedies for this disease. Therefore about 20 years separate the first collection of Brucella's symptoms and this last correction of 1995. The follow up of provers and patients is of long term, about few years reaching over 10 years; nowaday I continue to improve this pathogenesis with informations from patients, because it is not yet perfect.

There are many nosods coming from germs responsible of human brucellosis which are Brucella melitensis, B. abortus, B. suis and Melitococcinum or Melitine; The most well-known and used are Brucella melitensis (lysis of bacteriums) and Melitococcinum (filtrate of culture medium of Brucella melitensis).

Brucellosis on the physiopathological point of view is a disease that always become chronic, even in case of apparent and clinical recovery, by the persistence of few germs in the reticulo-endothelial system. By its chronicity and its specificity, Brucellosis look like tuberculosis but stand out by its rural and pastoral nature.

I. The conditions of the proving of Brucella melitensis 30 CH.

My provings lasted to 1983 from1988. They are in simple blind (except for P.S.: I am proving myself twice), with provers "in good health, objective, conscientious, scrupulous and credible"; in the majority the provers lived in rural environment far from cities and had a particularly regular way of life. The drug used was Brucella melitensis 30 CH (CH = centième hahnemannienne), in drops or impregnated small tablets (globules).

- 1. The provers. (dynamisation: 30 CH)
- A, sex female., 31 years old, homoeopath physician (C.P.), 1 dose globules (= 1 gramme of globules).
 - B, sex f., 7, (Ja.S.), 1 dose globules.
- C, sex male, 43, homoeopath physician, 2nd self-proving (P.S.), 1 dose alobules.
 - D, sex m., 17, (S.S.), 1 dose globules.
 - E, sex m., 20, (Jo.S.), 1 dose globules.
 - F, sex f., 30, 2 doses globules.
 - G, sex m., 35, 5 drops.
 - H, sex f., 37, (H.S.), 5 drops.
 - I, sex m., 38, (P.S.), 5 drops.
 - J, sex f., 25, 1 dose globules.
 - 2. The sources of symptoms resulting from clinical use.

The clinical cases providing symptoms or allowing their confirmation are of my practice over 30 patients, others cases are from Claudie Pepey, one is from Philippe Cayrel; some cases are from writings of Cantegrit, R. Schmidt, P. Schmidt.

The symptoms from a short pathogenesis of Melitococcinum by Julian are mentioned.

II. The symptoms of proving and clinical use.

The gradation of symptoms is:

- experimental symptoms not clinically checked.
- frequent experimental symptoms not clinically checked: * (end of valorisation /)
- experimental symptoms clinically checked or symptoms cured on the sick: ** (end of valorisation /)

Each symptom or group of symptoms is giving in a whole as it was collected, with between brackets the prover, the day and the parts not concerned by a heading rubric. For example:

- "Sensorium" rubric: (faintness), short ** vertigo/ with loss of sight (A 4 et 5 = prover A, 4 and 5 days after taking first dose).
 - "Generalities" rubric: ** faintness /(short vertigo with loss of sight)(A4 et 5). The symptoms in common with Melitine are noticed.

MIND.

- 1. **Sadness and depression/; indecision; ** inability to undertake anything/; **lack of emotional self-control: weeping easily /; she feels confused and worried; fixed ideas (A 5 7); ** depression (with fever)/ (cured symptom; man, 35, acute brucellosis).
 - 2. Unpleasant feeling to be flabby, slow, as if were in cotton (A 11).
- 3. **Apprehension, indecision and doubt of everything/; don't want to see anybody but fear to be alone; amelioration of mind symptoms in company or by some occupation (A 13 16) (sometime she have a depreciated view of herself; woman patient, 30, taking part in horse riding endurance trial cracked up and webt, feeling herself completely pathetic. Symptom certainly worthless, 1995).
- 4. **Apathetic, slow-witted and bad mood, especially in the morning /; amelioration by some occupation (A 13 16).
- 5. Weep as soon as someone raise one's voice to her; ** weep for nothing / (B about 34 41).
- 6. Forget things to do (H about 15 30); **distraction/ (patients of chronic brucellosis are very forgetful and absent-minded; for example a patient confided to me that he looked everywhere for a spoon while he got it in his hand).
- 7. **Irritability, nervousness, emotional instability / (symptom in common with Melitine; pointed out by Julian) (the irritability of patients of chronic brucellosis occur sometime brutaly; a usually courteous patient, suddenly and unexpectedly talk to you coarsely, or insulted you straight; the outburst is very brief, then the patient behaved as if nothing happened; this mental explosion is to compare with the brutal appearance of striking alarming symptoms but disappearing quickly).
- 8. **Cyclic depression: look on the dark side of things, no inclination to undertake, disenchanted / (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau).
 - 9. Alternation of restlesness and weakness like Arsenicum.

VERTIGO.

- 10. (Faintness), short **vertigo/ with loss of sight (and feeling of coldness that goes down), forcing her to to lean against something a few seconds (A 4 - 5).

- 11. **Vertigo/ (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau), ** at the slightest motion / (cured symptom; R. Schmidt).

HEAD.

- 12. ** Frontal headache in the morning /dull, feeling as if head were pressurized like a ball (french expression: "avoir la tête comme un ballon"), in the morning on waking and disappear about ½ hour on moving (A 4 9).
- 13. ** Headache / of progressive appearance, in the afternoon till going to bed, worse by motion and strong light; seems to be in keeping with the ocular problems (A 10).
- 14. Dull headache, in the night then worse at 6 A.M. in bed, coming back in the morning while sitting (C 8).
 - 15. Occipital headache in the morning (B 3 6).
 - 16. ** Headache / (Melitine; Julian).
 - 17. Greasy hairs (A 12).

EYES AND VISION.

- 18. *Feeling of eyes more wide open / till going to bed (A 2 11); feeling of tension of orbicular muscles (A 4).
 - 19. *Feeling of enlarged eyes / at evening meal (G 1).
 - 20. Bloodshot especially right eye and in the morning (A 7 11).
 - 21. Photophobia (A 8).
- 22. Itching of eyes / (symptom occuring accidentally on the patient; woman taking Melitine 5 CH for few days); * morning on waking / and evening before going to bed, decreased on rubbing the eyes (B about 34 41).
 - 23. * Itching of eyes on waking / and discharge in the evening (F starting from 21).

EARS AND HEARING.

- 24. Pressing pain of short duration of right ear (A 8).

NOSE.

- 25. Frequent and violent sneezings between 10 and 11 P.M. (A 2).
- 26. Itching of nose tip all the day (A 3).
- 27. Discharge of nose about 12 A.M. (C 4).
- 28. Feeling of dryness the nostrils, the left completely obstucted (A 30).

FACE.

- 29. Eruption, like comedos, near left coin of mouth (A 13).

MOUTH.

- 30. Important salivation (A 2 4; H 1; I 1) (uncertain symptom because never found since).
- 31. Continual need to swallow saliva (A 2 4) (uncertain symptom because never found since).
- 32. **Aphtha of internal face of left cheek (** with swelling of the region of left tonsil; painless but indolore mais sensitive to pressure) (H 6).

THROAT INTERNAL.

- 33. ** Pain/ like from a scratch on swallowing and drinking; on examination: red patches on the right half of palate (A 10 - 11).

- 34. Light dysphagia following the next day since waking by ** slight pain on swallowing saliva /; on examination: **aphtha/ on the internal face of right cheek, ** very red and swollen tonsils (left especially) / with chalk-like coat; ** tiny vesicles / on the velum and the pharynx (with feeling of dryness of nostrils, the left completely obstructed) (A 29 30).
- 35. ** Swelling of the region of left tonsil; painless but sensitive to pressure (with ** aphtha of internal face of left cheek) (H 6); (phlegmon of right tonsil then left tonsil, ending a nervous breakdown of 2 months in man about 35 years; symptoms certainly triggered by repeated taking of Melitine in 30 CH and 5 CH).

THROAT EXTERNAL.

- 36. Painful limitation of extension (A 13).

STOMACH.

- 37. Short pains of the region of stomach (H 1).
- 38. Vomiting (cured symptom in many patients of chronic brucellosis).

APPETITE AND THIRST.

- 39. Thirstless (A 2 5).
- 40. *Anorexia/ (Melitine; Julian); * loss of appetite / and thirstless, want of stimulants (tobacco, coffee,spices) (A 5).
 - 41. ** Alcohol doesn't agree /, beer give nausea (A 7).
- 42. * appetite wanting but thirst /, particularly in the evening after 10 P.M. (A 18 more than 20).

ABDOMEN.

- 43. * Heaviness of the liver region / all the day, sometime as if a blow, worse by palpation and pressure (A 6).
- 44. ** Distension / with slight nausea (A 17 18).
- 45. ** Tensed up and et bloated abdomen with some pains / particularly right hypochondria as if menses would appear; * heaviness with stitching pains /; sensitivity of right hypochondria and epigastrum to palpation, that cause nearly nausea; * diffuse pain in deep inspiration / (A 19 24).
- 46. * Pain of the liver region / in the morning on rising, * as if his liver were swollen /; the next days: ** post-prandial distension/ and rumble on going to bed in the evening (symptoms accidentally occured in patient; woman 50 year, not suffered from brucellosis, taking 1 dose globules of Brucella melitensis 30 CH two days before for pains of legs) (Melitine).
- 47. Throbbing pain of appendicular region, short and acute pain during few minutes, between 10 P.M. to 11 P.M. (A 16).
- 48. ** Wandering pains /, * short pains of stomach region, then under liver, then median above ombilic after eating / while seating, then * region of ovaries / particularly the left while standing (H 1).
 - 49. Acute pain all the day of the left side of abdomen worse while walking (H 19).
 - 50. She had pain in abdomen during coïtus (H 33).
- 51. ** Bloated painful abdomen /(cured symptom; R. Schmidt: with constipation; I have found personnally not many constipation in cases of brucellosis and Brucella, but a lot of diarrhoeae and soft stools).
- 52. ** Abdominal diffuse pains with distension / (cured symptom, man, 50, chronic brucellosis; noticed by Dr P. Cayrel, F12100 Millau).

- 53. Intestinal polype: (symptom rather frequently observed in chronic brucellosis patients, must be explained by chronic irritation of the bowels; to be verified).
- 54. ** Distension and pain ending brutally with a noise "as if he were breaking wind in his belly" / (cured symptom of Melitine 30 CH; man, 40, chronic brucellosis).

RECTUM AND STOOL.

- 55. * Small hard stool / (A 7) (Melitine; Julian); constipation (Melitine; Julian) (cured symptom: R. Schmidt; I have found personnally not many constipation in cases of brucellosis and Brucella, but a lot of diarrhoeae and soft stools).
- 56. **Soft sticking stool / (C for many months); ** watery frequent stool / (cured symptom).
- 57. Watery or very soft stools in the morning (cured symptom, woman, 30; the patient make 1 stool per day but that is watery or very soft; after 2 doses Melitine 30CH he make a normal stool in the evening) (Melitine 30CH).
 - 58. * Anal itching / (anal and perineal itching) (A 9 11).
- 59. * Itching and burning of short duration in anal region / (A 19), begining about 10 P.M. since going to bed (A 25).
- 60. * Irritation of anus: feeling of swelling and burning /, before and during menses (with menstrual disturbance: menses preceded by blood marks during 3 or 4 days) (H 19 more than 140).
- 61. Irritation of left half of anal margin (by excoriating irriting menses) (cured symptom, woman, 30, chronic brucellosis) (Melitine 30CH).
 - 62. * Hemorroids / (D, E, H within 6 months after the first dose).
- 63. Disappearance of an anal fissure (cured symptom in 1 prover; A, few months after the first dose).

URINARY ORGANS.

- 64. * Irritation of the terminal portion of urethra / (C 4 14).
- 65. * Burning when urinate / (F 4).
- 66. Frequent urging (H 1 et 11); urinate too much but drink little (A 9 11).
- 67. ** Pain of bladder, concomitant with distension and pain of abdomen (cured symptom with Melitine 30 CH; man, 40, chronic brucellosis).

GENITALIA (MAN).

- 68. ** Testicular pain / (cured symptom of Melitine 30 CH; man, 40, chronic brucellosis).

GENITALIA (WOMAN).

- 69. Profuse menses with persisting pains (usually only 1 day) (A 6).
- 70. Sexual excitement in the night (H 5).
- 71. * Menstrual disturbance /: menses preceded by blood marks during 3 or 4 days (with * Irritation of anus: feeling of swelling and burning /, before and during menses) (H 19 more than140).
- 72. Excoriating irriting menses (Irritation of left half of anal margin by excoriating irriting menses) (cured symptom, woman, 30, chronic brucellosis) (Melitine 30CH). (Dr F.A. Monnot, a french homoeopath, had mentionned a possibility of relation between endometriosis and brucellosis, on 1 patient suffering from endometriosis which he had make a diagnostic of brucellosis in the past by iridology; we have not etablish link between these two diseases on more than 30 cases almost diagnosed by scientific tests).

COUGH AND EXPECTORATIONS.

- 73. Cough as if were dust in throat pit about 9 P.M. (H 1) (some cases of chronic brucellosis present bronchitic periods alternating with rhumatisms).
- 74. Fits of coughs in the evening between 9 P.M. and Quintes de toux le soir 10 P.M. (F 7 and 9).

CHEST.

- 75. Pain of prechordial region extending to upper limbs and ending by swelling of hands (cured symptom, woman, 30, chronic brucellosis) (Melitine 30CH).

BACK.

- 76. ** Wandering diffuse pains particularly in lumbar region (thighs, hips) better by motion / (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau).
- 77. ** Lumbar pain when sitting, disappearing when standing /, in the evening (D 7).
- 78. ** Right lumbar pain, worse when sitting, better when standing /, extending to right scapula, between 3 P.M. and 4 P.M. (D 8).
- 79. ** Important lumbar pain /* while rising from long sitting / at 10.30 A.M., during 10 minutes, then decrease and dissapear completely about 1 hour (D 29).
- 80. * Dorsal pain, between the inferior edge of scapula and spine, in the morning on rising / (D 42).
- 81. * Dorsal pain / like an ache (in french: comme un endolorissement ou une courbature), band of pain across the 2 scapula points, worse when sitting and better when walking or standing or lying (A 18 32).
- 82. Feeling of coldness with shivers in the back (descending down in the arms to fingers extemities, and in the thighs, with feeling of heat in the cheeks) (H 1).
 - 83. Chronic Lumbalgo worse by exercice (cured symptom).

EXTREMITIES.

- 84. Desquamation of palms (J 10 15).
- 85. * Pain of shoulder / right shoulder and right elbow (J 1).
- 86. * Pain of shoulder / right shoulder on waking, worse on motion (F 21 more than 111).
- 87. * Pain of shoulder / left shoulder then next days of left elbow(symptoms accidentally occured in patient; woman not suffered from brucellosis, taking 1 dose globules of Brucella melitensis 30 CH).
- 88. * Heaviness and fatigability of upper limbs / (A 12 13).
- 89. * Band of ache across the 2 shoulders / as if carrying a weight (A 30 33).
- 90. Dull pain like ache or heaviness in the right sub-clavicular region and right arm (A 10).
- 91. Slight ** pain of (left) wrist / anterior face and radial side, worse by flexion and by motion (I 1).
- 92. ** Pain and swelling of right wrist, worse when grasping something, in the morning on rising / (cured symptom, man, 59, chronic brucellosis).
- 93. * Numbness of right thumb and its base / (dorsal face) in the morning on waking (E 17), then next days paresthesia of touch (in french: paresthésie au toucher) (E 18 more than 41).

- 94. ** Swelling and stiffness of (left) hand, dorsal face, particularly metacarpophalangial articulation of middle finger (seem to follow the extensor tendon) /, worse by motion or clenching fist or in contact with cold water or wet or change in weather (H 174 - 204).
- 95. Unpleasant feeling of dull deep pain in the right second intermetacarpial space, when writing (eruption of 2 inflamed vesicles on the dorsal face of this space in the third day) (A 20 22).
- 96. * Pain in the metacarpo-phalangial and proxima interphalangial of right thumb / when writing in the afternoon, disappear on rest (A 23).
- 97. ** Feeling of enlarged hands (J 1)/; ** dull pains of hands and feet, particularly dorsal face and in the morning, better as she make his work, with very clear and unpleasant feeling as if swelling (without swelling in examination) (cured symptom, woman, 40, chronic brucellosis; Noticed by Dr C. Pepey, F34000 Agones).
- 98. Swelling of hands (with pain of prechordial region extending to upper limbs and ending by swelling of hands) (cured symptom, woman, 30, chronic brucellosis) (Melitine 30CH).
- 99. * Pain of the base of right thumb / worse by motion; ** feeling of very heavy and enlarged hands / (A 38).
- 100. ** Muscular and articular pains / particularly of lower limbs (Melitine; Julian; I found personnaly in the cases of chronic brucellosis and Brucella as much pains in upper limbs as in lower limbs, perhaps more).
- 101. ** Wandering diffuse pains particularly of (lumbar region), thighs, hips (and also everywhere) better by motion / (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau)
- 102. Pains of lower limbs / (little girl, 5, taking accidentally 1 dose globules Brucella melitensis 30 CH; pains during about 15 days; noticed by Dr B. Long, F34000 Montpellier).
- 103. Coxalgia start from the left groin and extending to knee, appear brutally in the afternoon when driving car, lasting about 30 minutes, worse by motion of flexion and extension of the thigh, better at rest (A 1).
- 104. * Acute unpleasant feeling of heaviness and pricking, with veinous congestion of lower limbs particularly right / (A 3); * veinous pain of right leg persisting on rest, worse when walking and at pressure / (J 22 26); * pain of legs, anterior face and calf, when taking a walk / in open air (H 1).
 - 105. * Heaviness/ of thighs (J 1).
- 106. * Pain of knees when rising from sitting, desappear when standing / (symptom accidentally occured in patient; woman not suffered from brucellosis, taking 1 dose globules of Brucella melitensis 30 CH).
 - 107. Pain of head of left first metatarsal bone at 5 A.M. in bed (C 5).
 - 108. ** Pain of feet on walking when pressing down on the heels / (J 5).

SLEEP AND DREAMS.

- 109. * Unrefreshing restless sleep / (with perspiration) (A 22 28); with nightmare of bloody accidents, of wounded persons (A 28).
 - 110. Waking after midnight by a dream of guarrel (I 2 4).
- 111. Unpleasant dreams of past activities with the animals of the ferm (2 male patients, former sheep farmers); dream of being on the edge of precipice (patient, man, former sheep farmer).
- 112. Waking twice and three times by night and get back to sleep immediately, dream too much (D 20 more than 27).

- 113. Insomnia (symptom mentioned by Julian for Melitine).
- 114. Deep and heavy sleep (C).
- 115. Brutal desire of sleep (A 16).
- 116. ** Dreams with vertigo / (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau; only Silicea, remedy of goat, have this symptom noticed by P. Schmidt).

PERSPIRATION.

- 117. ** Norturnal sweat / (with unrefreshing restless sleep) (A 22 28).
- 118. ** Profuse sweat when exercising and at night / (Melitine; Julian).
- 119. ** Tendancy to sweat /, which make better (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau).
- 120. Sweat with smell of "rotten straw" (in french: odeur de "paille pourrie") of sheepfold (symptom used to diagnose brucellosis in the Cévennes).

FEVER AND SHIVER.

- 121. Feeling of coldness that goes down (faintness, at tvice, short **vertigo/ with loss of sight, forcing her to to lean against something a few seconds (A 4 et 5).
- 122. Feeling of coldness with shivers in the back descending down in the arms to fingers extemities, and in the thighs, with feeling of heat in the cheeks (H 1).
 - 123. Shivers (J 1).
- 124. ** Fever with profuse sweat / (cured symptom; Cantegrit, R. Schmidt; Melitine, Julian).
 - 125. ** Fever (** with depression)/ (cured symptom; man, 35, acute brucellosis).

SKIN.

- 126. * Eruption of 2 inflamed vesicles on the dorsal face of the right second intermetacarpial space (with unpleasant feeling of dull deep pain in the right second intermetacarpial space, when writing, three days before) (A 22).
 - 127. * Eruption of vesicles / (Melitine; Julian).
 - 128. Itching worse by rubbing (F 4).
- 129. ** Eruption of inflamed pimples, with too much itching, start at the dorsal face of the left upper arm, then other upper arm and legs / (cured symptom, man, chronic brucellosis) (Melitine 30CH).

GENERALITIES.

- 130. Aggavation:
 - ** periodical, in winter, in spring /, in summer, every 2 or 3 or 4 weeks.
- ** by prolonged exercice /,
- ** by changements of temperature (when entering in warm room, when going out in cold air)/
 - * by change of weather /,
 - * by wet, /
 - * by storm /
 - * by alcohol, /

when motionless.

when rising from sitting,

- * in the morning /,
- * after eating /.
- ** in warm room / (noticed by Julian for Melitine); by very hot summer.

by sea wind (noticed by Julian for Melitine).

- 131. Amélioration:
- by occupation,
- in compagny,
- by motion,
- by heat, particularly of the sun (Melitine; Julian) (some patients have faintness when going from cold open air to warm room and vice versa; but there is a ** amelioration by heat in open air /).
- 132. Alternation of symptoms (for example: articular pains disappear and cough appear).
 - 133. * Pricking pains everywhere / (J 1).
- 134. ** Wandering diffuse pains aniwhere particularly in lumbar region, in thighs, hips, better by motion / (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau).
- 135. ** Weariness in the morning / (A 16 20); with brutal desire to sleep (A 16).
- 136. ** Yearly periodical weariness, about end of winter, at spring / (cured symptom).
- 137. ** Faintness/ * (short faintness) after drinking an aperitif / about 8 P.M.: feeling of weakness, tingle of upper lip coming down in the backbone and the hands, ** need of open air and lying down / (A 18).
- 138. ** Faintness / at twice, short **vertigo/ with loss of sight and feeling of coldness that goes down, forcing her to to lean against something a few seconds (A 4 et 5).
- 139. ** Lipothymia / (Melitine; Julian); ** sudden weakness / (cured symptom; R. Schmidt), (Melitine; Julian).
- 140. ** Great weariness worse morning on rising / (cured symptom, man, 50, chronic brucellosis; Noticed by Dr P. Cayrel, F12100 Millau).
- 141. Complete unconsciousness, after recovering dont remember that happened (woman, 77, chronic brucellosis, infected at 60; then 4 months after had epilepsy fits treated by Orténal for several years. Three days after taking 1 dose globules Melitine 200 Korsakov, have again one fit).

BIBLIOGRAPHIE.

- 1. Cantegrit P. Melitococcinum. Homéopathie française 1965; 4: 205-210.
- 2. Foulon D. Traitement homéopathique de la chronic brucellosis. Homéopathie française 1984; 2: 77-80.
- 3. Jacob. La mélitococcie. Annales de l'Homéopathie française 1965; 5: 396-400.
- 4. Julian O.A. Traité de micro-biothérapie. Librairie Le François, Paris 1977, tome 2: 154-156.
 - 5. Nusbaum-Fournier. Brucella melitensis. Homéopathie française 1935: 799.
- 6. Seror R. Un cas de fièvre de Malte guéri par remède unique. Homéopathie française 1969; 1: 35-45.
- 7. Schmidt P. Discussion de cas cliniques: cas de fièvre de Malte. Cahiers du groupement hahnemannien de Lyon 2è série; 20: 704-709.
- 8. Schmidt R. Brucella un nosode rarement employé. Annales de l'Homéopathie française 1959; 2: 115-116.
- 9. Souk-Aloun P., Pepey C., P. Cayrel. Cas cliniques de Brucella melitensis. Cahiers du groupement hahnemannien 1989; 2: 72-78.