| Virus Name: Piry | Abbreviation: PIRYV |
|---|---|

Status
**Possible Arbovirus**

Select Agent
**No**

SALS Level
**3**

SALS Basis
**Results of SALS surveys and information from the Catalogue.**

Other Information
**USDA Permit Required**

Antigenic Group
**Vesicular Stomatitis**

## SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
**BeAn 24232**

Accession Number

Original Date Submitted
1/27/1985

Family
**Rhabdoviridae**

Genus
**Vesiculovirus**

Information From
**Belem Virus Lab.**

Address
**Belem Virus Laboratory, Instituto Evandro Chagas, Belem, Para, Brazil**

Information Footnote
**Reviewed by editor**

## Section II - Original Source

Isolated By (name)
**Belem Virus Lab.**

Isolated at Institute
**Belem, Para, Brazil**

Host Genus
**Philander opossum**

Species

Host Age/Stage
**Adult**

Sex
**Male**

| Isolated From | Isolation Details |
|---|---|
| **Organs/Tissues** | **Spleen and liver** |

Signs and Symptoms of Illness
**None**

Arthropod

Time Held Alive before Inoculation

Collection Method
**Trapped**

Collection Date
**10/12/1960**

Place Collected (Minimum of City, State, Country)
**Utinga forest, Brazil**

Latitude
**1° 28' S**

Longitude
**48° 27' W**

Macrohabitat
**Watershed forest**

Microhabitat
**Ground level**

Method of Storage until Inoculated
**Not stored**

Footnotes

## Section III - Method of Isolation

Inoculation Date
**10/12/1960**

Animal (Details will be in Section 6)
**nb mice**

Route Inoculated
**Intracerebral**

Reisolation
**Yes**

Other Reasons

Homologous Antibody Formation by Source Animal
**Not tested**

Test(s) Used

Footnotes

## Section IV - Virus Properties

Physicochemical

| | | |
|---|---|---|
| Pieces (number of genome segments) | Infectivity | Sedimentation Coefficients(s) (S) |
| Percentage wt, of Virion Protein | Lipid | Carbohydrate |
| Virion Polypeptides: Number | Details | |
| Non-virion Polypeptides: Number | Details | |
| Virion Density | Sedimentation Coefficients(s) (S) | |
| Nucleocapsid Density | Sedimentation Coefficients(s) (S) | |

**Stability of Infectivity (effects)**

pH (infective range)

| | | |
|---|---|---|
| Lipid Solvent (ether - % used to test) | After Treatment Titer | Control Titer |
| Lipid Solvent (chloroform) | After Treatment Titer | Control Titer |
| Lipid Solvent (deoxycholate)<br>**1:1000** | After Treatment Titer<br>**<4.5 dex** | Control Titer<br>**>9.3 dex** |

Other (formalin, radiation)

**Virion Morphology**

| | | |
|---|---|---|
| Shape<br>**Bullet-shaped** | Dimensions<br>**155 x 62 nm** | |
| Mean<br>nm | Range<br>nm | |
| Measurement Method<br>**Electron microscopy (1)** | Surface Projections/Envelope | Nucleocapsid Dimensions |

**Electron Microscopy (1)**

Dimensions; Symmetry

---

**Morphogenesis**

| Site of Constituent Formation in Cell | Site of Virion Assembly | Site of Virion Accumulation |
|---|---|---|
| Inclusion Bodies | Other | |

---

**Hemagglutination**

| Hemaggiutination | Antigen Source | Erythrocytes (species used) |
|---|---|---|
| **Yes** | **Vero roller cultures (2), supernatant fluid Attempts with SMB, liver, serum tr. by acetone; sucrose-acetone; prot., freon; and freon-n-heptane have failed.** | **Goose** |
| pH Range | pH Optimum<br>**6.2** | |
| Temperature Range | Temperature Optimum<br>**4dC** | |

Remarks

Serologic Methods Recommended
**HI, CF, NT**

Footnotes

## Section V - Antigenic Relationship and Lack of Relationship to Other Viruses

Not related by CF to viruses isolated in Belem using sera for groups A, B, C, Guama; for complexes Capim, California, Wyeomyia; and specific sera for Cache Valley, Kairi, Guaroa, Oropouche, Tacaiuma, Mirim, Icoaraci, Candiru, Acara, Pacui, Irituia, Jurona.
CF tests with Piry antigen against antisera for 48 arboviruses and LCM showed no reactions. CF tests with Piry hyperimmune mouse serum against 62 arboviruses and Herpes simplex antigens were negative. In HI tests, Piry hyperimmune serum failed to inhibit HA of 33 arboviruses.
Serological relationship to other members of VSV group found as follows:

| Piry Antigen/Virus | | | | | | | Piry Antiserum | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | HI | | CF | | NT | | HI | | CF | | NT |
| Immune Sera | Ht/Ho | Ratio | Ht/Ho | Ratio | Ht/Ho | Antigens/ Viruses | Ht/Ho | Ratio | Ht/Ho | Ratio | Ht/Ho |
| VSNJ | | | 0/256 | 0 | 2.5/5.0+ | VSNJ | | | 0/128 | 0 | 0/5.7 |
| VSI | | | 0/256 | 0 | 2.3/6.2+ | VSI | | | 0/128 | 0 | 0/5.7 |
| Cocal | | | 0/256 | 0 | 2.6/7.0+ | Cocal | | | 0/128 | 0 | 1.7/5.7 |
| Chandipura | | | 8/128 | 1/16 | 3.4/5.7+ | Chandipura | | | 0/128 | 0 | 4.6/5.7 |

NT: LNI in dex

## Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
**Serum (M), pool of spleen and liver (LV)**

Lab Methods of Virus Recovery (ALL ISOLATIONS)
**Newborn mice**

| Cell system (a) | Virus passage history (b) | Evidence of Infection | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | CPE | | | PLAQUES | | | Growth Without CPE | |
| | | Day (c) | Extent (d) | Titer TCD50/ml (e) | Day (c) | Size (f) | Titer PFU/ml (e) | +/- (g) | |
| BHK-21(CL) | P-3 | | | | <4.0 | Plaques | 8.3*(4) | | |
| Chick embryos(PC) | | | | | 2-3 | 2 sizes | 7.5(4) | | |
| Turkey embryo(PC) | | | | | 2-3 | 2 sizes | 7.5(4) | | |
| Mouse embryo(PC) | | | | | | | 7.95(4) | | |
| GMK (CL) | | | | | | Plaques (4) | | | |
| Vero (CL) | | | CPE (2) | | | | | | |

* Expressed in dex

Section VII - Natural Host Range (Additional text can be added below table)

| Vertebrate (species and organ) and arthropod | No. isolations/No. tested | No. with antibody/No. tested Test used | Country and region |
|---|---|---|---|
| Man (blood; lab infection) | 1 | 15/83 NT | Xingu, Brazil |
| Man | | 3%/31 NT | Rondonia, Brazil |
| Man | | 5/374 NT | Elsewhere, Brazil |
| Philander opossum | 1 | | Para, Brazil (3) |
| Philander opossum | | 0/31 NT | Para and Amapa, Brazil |
| Other marsupials | | 16/337 NT | |
| Monkeys | | 8/104 NT | |
| Edentates | | 8/91 NT | |
| Rodents | | 13/508 NT | Para, Brazil |
| Bats | | 1/39 NT | |
| Birds | | 0/178 NT | |
| Pigs | | 4/178 NT | |
| Water buffalo | | 2/291 NT | |
| Horses, cattle | | 0/103 NT | |
| Man | | 105/261 * | Rio Grande do Sul, Brazil (7) |

No isolation from arthropods

* Rates increased with age

## Section VIII - Susceptibility to Experimental Infection (include viremia)

| Experimental host and age | Passage history and strain | Inoculation Route-Dose | Evidence of infection | AST (days) | Titer log10/ml |
|---|---|---|---|---|---|
| Mice (nb) | P-3 | ic 0.02 | Death | 1.3 | 10.7+ |
| Mice (nb) | | ip 0.02 | Death | 1.7 | |
| Mice (nb) | | sc | | | |
| Mice (wn) | | ic 0.03 | Death | 3.8 | |
| Mice (wn) | | ip 0.03 | Antibody | | >20.0 |
| white rats (ad) | Prototype | ip 0.2 | Antibody | | |
| guinea pigs (ad) | | ip 0.2 | Viremia, antibody | | |
| hamsters (ad) | | ip 0.2 | Viremia, death | 2.5 | |
| Didelphis, Philander(ad) | | im,sc 0.2 | Viremia, death | 4-12 | |

S-180 ascites tumor of mice destroyed by Piry virus, but virus titer potentiated (6).

Ponies, intralingual, elevated temp., ulcers at inoc. site; antibody production (8).

Steers, sheep, goats, intralingual, antibodies (8).

Pigs, inoc. in snout, heel, coronary band, antibodies (8).

## Section IX - Experimental Arthropod Infection and Transmission

| Arthropod species & virus source(a) | Method of Infection log10/ml (b) | | Incubation period (c) | | Transmision by bite (d) | | Assay of arthropod, log10/ml (e) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Feeding | Injected | Days | °C | Host | Ratio | Whole | Organ | System |
| Ae aegypti | By parenteral inoculation achieved 3 serial passages in salivary glands (5). | | | | | | | | |

## Section X - Histopathology

Character of lesions (specify host)
**Diffuse in connective tissue, liver and kidneys (mice). In a Didelphis, reticulohistiocytic hyperplasia, with long mononuclear cells, in focal areas of renal interstitial tissue, hepatic sinusoids, and red pulp of spleen (L.B. Dias).**

Inclusion Bodies — Intranuclear

Organs/Tissues Affected

Category of tropism

## Section XI - Human Disease

In Nature — Residual — Death

Subclinical — Overt Disease
**Significant**

Clinical Manifestations
**Fever (S), headache (R), prostration (S), myalgia (S), arthralgia (S), and RUQ tenderness, loss of desire to smoke, anorexia**

Number of Cases
**6 (all laboratory infections)**

Category (i.e. febrile illness, etc.)

## Section XII - Geographic Distribution

Known (Virus detected)
**Brazil**

Suspected (Antibody only detected)

## Section XIII - References


1. Bergold, G.H. and Munz, K. 1970. Arch. ges. Virusforsch. 31:152-167.
2. Director, YARU. Personal communication. 1968.
3. Woodall, J.P. 1967. Atas Simpos. Biota Amazon. 6:31-63.
4. Pinheiro, F.P. Personal communication.
5. Whitman, L. Personal communication.
6. Belem Virus Laboratory, Belem, Brazil. 1969. Unpublished data.
7. Pinheiro, F.P., et al. 1974. PAHO Bull. 8:111-122.
8. Wilks, C.R. and House, J.A. 1984. J. Hyg. 93:147-156".


## Remarks