

PREGNANCY DIAGNOSIS IN THE ORANGUTAN (*PONGO PYGMAEUS*) USING THE SUBHUMAN PRIMATE PREGNANCY TEST KIT^{1,2,3,4}

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SUMMARY • A determination was made of the gestational interval over which the Subhuman Primate Pregnancy Test, a hemagglutination inhibition test for urinary chorionic gonadotropin, accurately indicated conception and the continuation of pregnancy in an orangutan (*Pongo pygmaeus*). The initial positive diagnostic test response occurred about 8 months before parturition and positive responses continued throughout gestation. A test made one day after parturition was positive indicative of some residual urinary chorionic gonadotropin. Tests made 3 days after parturition and later were negative.

KEY WORDS • Pregnancy diagnosis—Hemagglutination inhibition—Chorionic gonadotropin—Orangutan

Application of the Subhuman Primate Pregnancy Test kit to pregnancy diagnosis in macaques (1), baboons (2), marmosets (3), and the chimpanzee (4) has been described previously. This hemagglutination inhibition test for urinary chorionic gonadotropin uses an antiserum (H-26) to the beta subunit of ovine luteinizing hormone and was reported (1) to crossreact with the chorionic gonadotropin of orangutans (*Pongo pygmaeus*).

In the present study, we determined the gestational interval over which the Subhuman Primate Pregnancy Test accurately indicated conception and the continuation of

pregnancy in an orangutan.

MATERIALS AND METHODS

The orangutan used in this study was born 19 October 1967 at Yerkes Regional Primate Research Center and placed in a family group at the Atlanta Zoo from 1969 to 1973, when she was brought to the National Zoological Park, Washington, DC. Although this orangutan began mating soon after arrival, our investigation concerns her initial pregnancy which resulted in the live birth of a female infant.

The diet included a commercial primate feed plus eggs, milk, fresh fruit and vegetables, with water available. Thirty-two urine samples were collected, usually by catching the urine in a clean specimen container during voiding. The urine was centrifuged and the supernatant used for conducting the pregnancy tests. Fresh urine specimens, those refrigerated overnight, and some which had been stored frozen for up to 3 weeks, all gave satisfactory test results. Pregnancy tests were performed using the

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³ The Subhuman Primate Pregnancy Test kits were prepared for distribution under the aegis of the Contraceptive Development Branch, Center for Population Research, National Institute of Child Health and Human Development, and can be obtained at no cost by writing to the Hormone Distribution Officer, Office of the Director, NIAMDD, Bldg 31A, Room 9A47, National Institutes of Health, Bethesda, MD 20014.

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TABLE 1

Results of the hemagglutination inhibition test (Subhuman Primate Pregnancy Test) on urine specimens collected throughout gestation of a 9-year old orangutan

Date of urine collection	Test result
6-05-75	-
9-17-75	-
11-19-75 ^a	+
1-14-76	+
1-15-76	+
1-16-76	+
1-19-76	+
1-23-76	+
1-26-76 ^a	+
1-29-76	+
2-02-76	+
2-06-76 ^a	+
2-09-76	+
2-12-76	+
2-20-76	+
2-23-76	+
3-29-76	+
4-08-76	+
4-12-76 ^a	+
4-26-76	+
5-03-76	+
5-10-76 ^a	+
5-17-76 ^a	+
5-24-76	+
6-07-76	+
6-10-76	+
6-16-76	+
6-21-76	+
7-05-76	+
7-06-76	Parturition
7-07-76	+
7-09-76	-
7-26-76	-

^aDiluted 1:3 to resolve inconclusive test

Subhuman Primate Pregnancy Test kit as described previously (1).

RESULTS

The initial positive diagnostic test response occurred about 8 months before parturition and continued in 26 additional specimens collected intermittently over the next 8 months (Table 1). During the last 6 weeks of pregnancy, the diameter of the ring formation in the hemagglutination inhibition test became greater, suggesting a decline in the concentration of urinary chorionic gonadotropin. During the initial 72 hours after parturition, one of two pregnancy tests remained posi-

tive, indicative of some residual urinary chorionic gonadotropin. However, the urine specimens collected 3 weeks or more after delivery were negative.

Among the 32 urine specimens tested here, six produced an inconclusive response (ring lacking in both the test and control tubes) at the time of the initial test. However, each of these inconclusive tests was resolved to be positive after diluting the urine 1:3 in deionized water and repeating the test.

In addition, all 11 urine specimens from a nonpregnant, adult orangutan gave negative test responses.

DISCUSSION

Although the data presented are preliminary, they suggest that the Subhuman Primate Pregnancy Test may be useful for diagnosis of pregnancy in orangutans by providing positive test results during the first 6 weeks of pregnancy and until near the time of delivery. Overall, these findings are consistent with those of an earlier report on pregnancy diagnosis in the orangutan (5) and are similar to our results on pregnant chimpanzees (4). Although our number was too small to assess the risk of false positive results with this ape, we did not observe any. Among other primate species, the false positive rate is less than 1% (1-4).

The virtues of this hemagglutination test are inherent in its simplicity of application. The Subhuman Primate Pregnancy Test kit may provide a rapid and reliable method for pregnancy diagnosis in the orangutan without applying sophisticated laboratory equipment or highly skilled technical competence. It requires only 0.2 ml of neat (undiluted) urine and gives definitive test results within 2 hours. Use of this diagnostic test eliminates the need to rely on traditional methods of pregnancy diagnosis, such as bioassay or uterine palpation, and allows for efficient management of breeding pairs. The sensitivity of the Subhuman Primate Pregnancy Test

is superior to that of tests devised for pregnancy diagnosis in women (5). That the orangutan is an endangered species and in demand for exhibit by various zoological institutions underscores the importance of a useful test for diagnosis of pregnancy in this ape.

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