seracult® PLUS

PRODUCT DESCRIPTION & INSTRUCTIONS

A fecal occult blood test with performance control for in vitro diagnostic use

INTENDED USE

The Seracult Plus test is a rapid and aesthetically acceptable method of detecting fecal occult blood. It is used as a qualitative aid to the diagnosis of various gastrointestinal conditions, which manifest themselves by the presence of fecal occult blood. Due to its design and ease of handling this test lends itself to ready use in routine physical examinations and routine hospital testing. It is suitable for the monitoring of post-surgical bleeding or patients with ulcerative colitis, peptic ulcers or iron deficiency anemia and other conditions resulting in increased presence of fecal occult blood. Seracult Plus may be used in screening programs for colorectal cancer if the Special Diet recommendations are followed. **The greater sensitivity of Seracult Plus renders it especially useful for monitoring patients at high risk for colorectal diseases.**

SUMMARY

The Seracult Plus test provides, in kit form, a convenient version of the laboratory guaiac test for occult blood. The test consists of a special guaiac-impregnated paper available in 2 variations: mounted in an individual cardboard slide and mounted in a triple cardboard slide for serial determinations. A smear from a stool sample is applied to one side of the paper while the development of the impregnated reagents is performed on the other side. Aside from adding a few drops of developer solution to the paper, no other physical or chemical manipulations of the test components or reagents are necessary.

When a small smear from the stool sample containing occult blood is applied to the paper, the hemoglobin from the blood comes in contact with the impregnated guaiac on the slide. Upon addition of the developer, a peroxide-like reaction occurs which turns the paper blue within 30 to 60 seconds. Appearance of any blue color on the specimen area of the slide is indication of the presence of occult blood.

Seracult Plus is a more sensitive test than conventional guaiac slide tests. Consequently, it will have both a higher sensitivity for possible diseases and also a higher than normal false-positive rate in normal patient populations.

It should be noted that results with the Seracult Plus test, as with any fecal occult blood test, are not to be conclusive evidence for the presence or absence of any gastrointestinal pathology.

This test is designed for routine physical examinations, mass screenings when the special diet recommendations are followed, or as an aid to diagnosis. It is not a substitute for other diagnostic procedures such as endoscopy or proctosigmoidoscopic examinations, barium enema or other x-ray studies.

All Seracult Plus tests are CLIA Waived.

BASIC PRINCIPLES OF TEST

Alpha-guaiaconic acid, a component of natural guaiac-resin, can be oxidized by hydrogen peroxide to yield a blue pigment. The rate of this reaction can be increased by the addition of peroxidase-like compounds. The hemoglobin component of whole blood is capable of exerting peroxidase-like activity and is thus able to catalyze the oxidation of alpha-guaiaconic acid. This oxidation produces the visible result of blue coloration.[7]

This reaction between alpha-guaiaconic acid in the guaiac resin (on the slide) and hydrogen peroxide (in the developer) catalyzed by the hemoglobin fraction of blood (if present in the stool) is the biochemical basis for the Seracult Plus fecal occult blood test.

REAGENTS

Do not substitute reagents from other manufacturers, other product types, or from expired lots.

Seracult Plus SLIDES with Performance Controls

Seracult Plus slides are made of a special absorbent paper impregnated with natural guaiac resin mounted in an individual or triple cardboard slide.

Each slide has two sides: one for the application of the patient specimens and the other for specimen development.

The specimen development side is divided into two areas: the large Specimen Test Area and a smaller Performance Control Area. These areas are separated from each other by an impermeable inert hydrocarbon barrier, which prevents the migration of developer from one area to the other. A Performance Control Line within the Performance Control Area contains a hemoglobin derivative, which is comparable to hemoglobin in its chemical reactivity. Seracult Plus slides are ready to use as packaged.

Seracult Plus slides are available either as a single slide for testing one stool sample, or as a triple slide for testing stool samples from three consecutive bowel movements. The gastrointestinal bleeding is intermittent, therefore the testing of serial bowel movements increases the chances of detecting occult blood.[1]

Seracult Plus slides may be prepared by the patient at home and then returned to medical personnel for development. After applying the specimen, the slide can be returned either in person or by mail. For patients returning the slide by mail, the Seracult Plus Mailing Kit should be used. This kit includes a US Postal Service approved envelope for convenient return of the prepared slide. Slides may not be mailed in regular envelope; only the included approved envelopes may be used. The Seracult Plus Patient Kit is available to patients who will be returning the slide in person.

Seracult Plus DEVELOPER

The developer is an aqueous solution of approximately 4% hydrogen peroxide and 84% ethanol with certain enhancing additives and is ready for use as packaged.

In the event that the developer runs out before all the slides are used, additional bottles of developer may be ordered separately. Any lot of Seracult Plus developer may be used with any lot of Seracult Plus slide, provided the expiration dates of each product have not lapsed.

Note: *Do not interchange Seracult Plus reagents with Seracult reagents. Seracult Plus slides may only be developed using the Seracult Plus developer.*

PRECAUTIONS

Seracult Plus slides: For in-vitro diagnostic use only. Do not use product after expiration date. For slides, the test is not valid if the performance control area does not yield a blue color.

Seracult Plus developer: For in-vitro diagnostic use only. Do not use after expiration date. Do not ingest. The developer is flammable; keep away from open flame. **The developer is an irritant; avoid contact with eyes and skin. If contact occurs, flush the affected area with water.** Since the developer evaporates readily, keep the bottle tightly capped when not in use.

The Seracult Plus developer is only to be used with Seracult Plus slides. Do not replace any Seracult Plus reagents with Seracult test reagents

STORAGE & STABILITY

Seracult Plus slides and developer are to be stored between 59° - 86° F (15° - 30° C) and are stable until the expiration date imprinted on each slide and bottle when stored as recommended. Do not refrigerate or freeze. Protect from heat, sunlight, fluorescent light and ultra-violet radiation as this will cause degradation of the chemical compound. For slides, a very faint blue or gray-green discoloration may occur. This discoloration will not affect test performance. Storage of Seracult Plus slides under recommended conditions may help to prevent discoloration.

SPECIMEN COLLECTION

The specimen collection required is a small stool sample, which should be applied as a thin smear onto both windows of the Seracult Plus slide. Slides may be developed immediately after specimen application or may be stored and developed up to 28 days after specimen application. Once they have been prepared with a specimen, keep the slides away from heat and light. Hands, gloves and the work area should be kept clean and free of blood to avoid accidental contact of blood with the slides.

Patients experiencing hemorrhoidal bleeding, having a menstrual period, or bleeding from the nose, gums, etc., should delay testing for at least 48 hours from the time that all such bleeding has stopped. Rectal suppositories or medications should be stopped before specimen collection.

To increase the chances of detecting intermittent gastrointestinal bleeding, it is recommended that stool samples be collected from three consecutive bowel movements and that two smears be made from two different areas of each bowel movement.[1,2]

PATIENT PREPARATION

Since Seracult Plus has a greater sensitivity, it is essential that the patient follow the red meat-free, low-peroxidase Special Diet for at least two days prior to, and during, the testing period to decrease the possibility of false positive results.

SPECIAL DIET

PATIENT MAY CONSUME

- Generous amounts of cooked and uncooked vegetables such as lettuce, corn and spinach
- Moderate amounts of high fiber foods such as bran cereal, peanuts and popcorn
- Plenty of fruits such as plums, grapes and apples
- Well cooked pork, poultry and fish

PATIENT SHOULD NOT CONSUME

- Rare and lightly cooked meats, particularly beef
- Cauliflower, turnips or broccoli, unless well cooked
- Horseradish, radishes or cantaloupe
- Vitamin C in excess of 250 mg per day
- Iron rich supplements
- Aspirin and other medications which may cause gastrointestinal irritation
- Excessive amounts of alcoholic drinks

Dietary catalases and peroxidases derived from various meats and vegetables may contribute significant positive results.[13]

Note: *If any of the above dietary restrictions and recommendations are known to cause discomfort, patients should be instructed to inform their physician. The patient should always consult the physician before discontinuing or interrupting any prescription medication.*

INTERFERING SUBSTANCES

It should be carefully explained to the patient that Seracult Plus is a more sensitive test and they should avoid ingesting substances which can cause either false positive or false negative results.

Ingestion of high doses of vitamin C (ascorbic acid) in excess of 250 mg per day has been linked to false negative results.[6] Intake should be discontinued two days prior to and during the testing period.

Oral iron preparations such as iron-rich supplements have been associated with higher than normal percentage of false positive results in healthy patients.[12] Ingestion of therapeutic iron should be discontinued 2 days prior to and during the testing period.

Certain oral medications may cause gastrointestinal irritation and bleeding. Medications such as aspirin, indomethacin, phenylbutazone, corticosteroids and reserpine should, with the consent of a physician, be discontinued 7 days prior to and during the testing period.[5, 18]

The physician should always assess the advisability of any change to a prescription medication regimen.

INTERPRETATION OF RESULTS

SPECIMEN TEST AREA

Results must be obtained by visual observation 30 to 60 seconds after the application of the developer solution. Any trace of blue color in the Specimen Test Area is positive indication of occult blood. The absence of a blue color in the Specimen Test Area indicates a test negative for occult blood. Since any developed blue color may fade after two to four minutes, it is imperative that the developed slide be examined within the recommended time period.

PERFORMANCE CONTROL AREA

The performance control test allows the user to verify the reactivity of the paper and developer used in each Seracult Plus slide test. Any blue color developed in the Performance Control Area acts as verification of correct product performance. (The shade or intensity of the blue color developed with the performance control test may not be indicative of the blue color that is obtained from a positive specimen test.)

The performance control test should only be performed after the patient specimen tests have been developed and interpreted to ensure the most objective interpretation of the patient specimen tests. If developer solution should accidentally cross over the barrier between the Performance Control Area and The Specimen Test Area, or if developer solution should inadvertently be applied to the Performance Control Area while the Specimen Test Area is being developed, the blue color developed in the Performance Control Area should not be considered positive indication for the presence of occult blood.

A lack of blue color in the Performance Control Area after proper development indicates that the slide test is not performing to product specifications. Specimen test results from a slide which fails the performance control test should be considered invalid and the test repeated.

LIMITATIONS OF PROCEDURE

The Seracult Plus test is designed to detect the hemoglobin fraction of occult fecal blood in human stool specimens. Human fecal matter normally contains enough water and salts to induce hemolysis and release hemoglobin into the stool. This hemolysis and release of hemoglobin is an essential prerequisite to the proper performance of the Seracult Plus test. Blood that is insufficiently hemolyzed, such as from hemorrhoids or a finger stick, may not yield a positive test result.

The slide should not be rehydrated before applying the developer; this could result in false positives.

The Seracult Plus test is intended for use as a diagnostic aid when the possible presence of fecal occult blood is suspected or its detection is necessary in patients at increased risk for colorectal diseases. It should be recognized, however, that some bowel lesions may not bleed or may bleed intermittently, and that blood is not distributed uniformly in feces.[1] Accordingly, a negative test result is not conclusive evidence for the absence of any pathological condition.

It must also be recognized that the greater sensitivity of Seracult Plus may yield false positive results in healthy patients. Such false positives may be due to the presence of interfering substances, inadequate compliance with the Special Diet or to the presence of low levels of occult blood in the feces that is common to healthy adults or to patients with gastrointestinal disease.

Seracult Plus is intended only as an aid to diagnosis and not a replacement for any other diagnostic procedures.

EXPECTED RESULTS

Due to greater sensitivity of Seracult Plus over conventional guaiac slide tests, even in patient populations that received adequate preparation by following the special diet, an increased rate of false positives may be expected. Such factors such as age, diet and the possible presence or predisposition to colorectal disease, as well as other conditions which could be associated with gastrointestinal bleeding, have been documented to affect the rates of positive responses to the test.[20]

PERFORMANCE CHARACTERISTICS

Human blood was diluted with deionized water to yield several solutions with different hemoglobin concentrations. These solutions were used to determine the sensitivity and reproducibility of Seracult Plus compared to another commercially available enhanced sensitivity slide test. Both tests reacted positively at hemoglobin concentrations of 0.0032 mg/ml 10/10 times. At 0.0028 mg/ml or below, no positive reaction was observed. Seracult Plus exhibited greater sensitivity than conventional guaiac slide tests.

In vitro studies have shown that guaiac-impregnated slides are able to detect 2 to 4 ml of blood per 100 g of feces – a loss of blood about twice the normal daily fecal loss in a human adult.[9]

The guaiac-impregnated paper test has been extensively studied.[3,4,11, 14-17] In summary, these clinical studies show that the guaiac-impregnated slide test yields a positive rate of 3 to 5% in screening applications, while the false positive rate has been between 1 and 2 % in patients receiving adequate preparation by strictly adhering to the Special Diet and observing all other specifications. It should be expected that fecal occult blood tests with higher Human blood was diluted with deionized water to yield several solutions with different hemoglobin concentrations. These solutions were used to determine the sensitivity and reproducibility of Seracult Plus compared to another commercially available enhanced sensitivity slide test. Both tests reacted positively at hemoglobin concentrations of 0.0032 mg/ml 10/10 times. At 0.0028 mg/ml or below, no positive reaction was observed. Seracult Plus exhibited greater sensitivity than conventional guaiac slide tests.

PROCEDURE

MATERIALS SUPPLIED

Professional Instruction Booklet; Seracult Plus Single Slides (for single determinations) or Seracult Plus Triple Slides (for serial determinations); or Developer Solution; Specimen Applicators (supplied with slides); Patient Instructions (supplied with Seracult Plus Patient Kits and Mailing Kits); Flushable Collection Tissues and U.S. Postal Service Approved Mailing Envelopes (supplied with Seracult Plus Mailing Kits).

The above materials are components of different kits. The materials included in each product will vary depending on the particular kit that is ordered.

TEST INSTRUCTIONS FOR SLIDES

A. Slide Identification

Identify each slide with the requested information.

B. Slide Preparation

(Patient or Professional Personnel)

1. Open front flap of slide.
2. Collect a small sample of stool on one end of the applicator stick. Apply a thin smear to one window. Wipe applicator clean.
3. From another part of the stool, collect another small sample using the same applicator as before and apply toother window.
4. Cover front flap of slide.

C. Slide Development

(Professional Personnel Only)

1. Open perforated cover on back of slide.
2. Apply two drops of developer solution to each smear in the Specimen Test Area.

3. Read results within 30 to 60 seconds. ANY TRACE OF BLUE COLOR IS POSITIVE FOR OCCULT BLOOD. COLOR BEGINS TO FADE AFTER 2 TO 4 MINUTES.
4. Develop the performance control area ONLY AFTER SPECIMEN TEST HAS BEEN COMPLETED AND INTERPRETED. Apply one drop of developer solution to the Performance Control Line. A blue color should appear within 30 seconds when the Seracult reagent test paper and developer are performing according to specifications.

5. Negative control test may be performed in any area of the guaiac-impregnated paper that has not been in contact with the fecal specimen.
6. If the controls don't perform as expected, that patient's test results are invalid. Please contact Propper if such a problem is observed.

ORDERING INFORMATION

Seracult Plus tests for fecal occult blood available as follows (please order by number):

Seracult Plus Singles: Single slides of guaiac impregnated paper with performance controls. Box of 100 Seracult Plus single slides with two 15-ml bottles of Seracult Plus developer and 100 applications.
Reorder No. 37400100

Carton of 1,000 Seracult Plus single slides: 10 boxes each with 100 slides, twenty 15-ml bottles of Seracult Plus developer, and 1,000 applicators.
Reorder No. 37400200

Seracult Plus Triples: Three-unit slides of guaiac impregnated paper with performance control. Box of 102 slides (34 Seracult Plus three-unit slides) with two 15-ml bottles of Seracult Plus developer, and 102 applicators.
Reorder No. 37500400

Seracult Plus Mailing Kits: 2 dispenser boxes, each with 40 kits and two 15 ml bottles of Seracult Plus developer. Each kit contains one Seracult Plus triple slide, collection tissues, applicators, U.S. Postal Service-approved mailing envelope, U.S. Postal Service approved inner pouch, and instructions for patient use.
Reorder No. 37500700

Seracult Plus Patient Kits: 2 dispenser boxes, each with 50 kits and three 15 ml bottles of Seracult Plus developer. Each kit contains one Seracult Plus triple slide, applicators, envelope and instructions for patient use.
Reorder No. 37500300

Seracult Plus Developer: Box of twenty 15-ml bottles of Seracult Plus developer.
Reorder No. 37701500

Seracult Plus Mailing Envelopes: Box of 100 U.S. Postal Service-approved mailing envelopes.
Reorder No. 37901600

Seracult Plus Inner Envelopes: Box of 100 protective poly bags. Inner envelopes are intended for use either when returning the slide in person or as an inner envelope when mailing.
Reorder No. 37901700

Note: *Reorder No 37901600 and 37901700 combined meet all U.S. Postal regulations.*

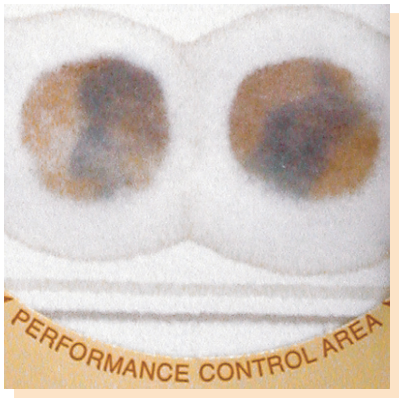
BIBLIOGRAPHY

1. Rosenfield, R.E., et al. Nonuniform distribution of occult blood in feces. Am J. Clin. Path. 71:204-209, 1979
2. Ransohoff, D.F., and Lang, C.A., Clinical guidelines: Part I-suggested technique for fecal occult blood testing and interpretation in colorectal cancer screening. Ann. Intern. Med. 126:808-810, 1997
3. Ransohoff, D.F., and Lang, C.A., Clinical guidelines: Part II-screening for colorectal cancer with the fecal occult blood test: A Background Paper. Ann. Intern. Med. 126:811-822, 1997
4. Bond, J.H., Fecal occult blood test screening for colorectal cancer. *Gastrointestinal Endoscopy Clinics of North America.* 21:11-21, 2002
5. Greenberg, P.D., et al. Asymptomatic chronic gastrointestinal blood loss in patients taking aspirin or warfarin for cardiovascular disease. Am. J. Med. 100:598-604, 1996
6. Jaffe, R.M., Kasten, B., Young, D.S., and MacLowry, J.D. False-negative stool blood tests caused by ingestion of ascorbic acid (Vitamin C) Ann. Int. Med. 83:824-826, 1975
7. Kratochvil, J.F., Burris, R.H., Seikel, M.K., and Haskin, J.M. Isolation and characterization of alpha-guaiaconic acid and the nature of guaiacum blue. Phytochem. 10:2529-31, 1971.
8. Walsh, J.M.E., Terdiman J.P, Colorectal cancer screening: Scientific review. JAMA. 289:1288-1296, 2003
9. Macrae, F.A., and St John, D.J.B, Relationship between patterns of bleeding and Hemmocult sensitivity in patients with colorectal cancers or adenomas. Gastroenterol. 82:891-898, 1982
10. Rockey, D.C., et al. Detection of upper gastrointestinal blood with fecal occult blood tests. Am. J. Gastroenterol. 94:344-350, 1999
11. Ostrow, J.D., Mulvaney, C.A., Hensell, J.R., and Rhodes R.S. Sensitivity and reproducibility of chemical tests for fecal occult blood with an emphasis on false-positive reactions. Amer. J. Digest Dis. 18-930-940, 1973
12. Lifton, L.J. and Kreiser, J. False-positive stool occult blood tests caused by iron preparations. A controlled study and review of literature. Gastroenterol. 83:860-3, 1982.
13. Caligore, P., Macrae, F.A., et al. Peroxidase levels in food: relevance to colorectal cancer screening. Am. J. Clin. Nutr. 35:1487-9, 1982
14. Hastings, J.B., Mass screenings for colorectal cancer. Amer. J. Surg. 127:228-233, 1974
15. Winawer, S.J., et al. Colorectal cancer screening: Clinical guidelines and rationale. Gastroenterol. 112:594-642, 1997
16. Greegor, D.H. Occult blood testing for detection of asymptomatic colon cancer. Cancer 28:131-134, 1971
17. Greegor, D.H. A progress report — detection of colorectal cancer using guaiac slides. Ca 22(6): 360, 1972
18. Grossman, M.N., Matsumoto, K.K., and Lichter, R,J. Fecal blood loss produced by oral and intravenous administration of various salycilates. Gastroenterol. 4:383-388,
19. Johnson, P.G. Gastrointestinal consequences of treatment with drugs in elderly patients. J. Am. Ger. Soc. 30(11):S52, 1982
20. Morris, D.W., et al. Reliability of Chemical Tests For Fecal Occult Blood in Hospitalized Patients. Dig. Dis. 21:845, 1976

seracult® PLUS

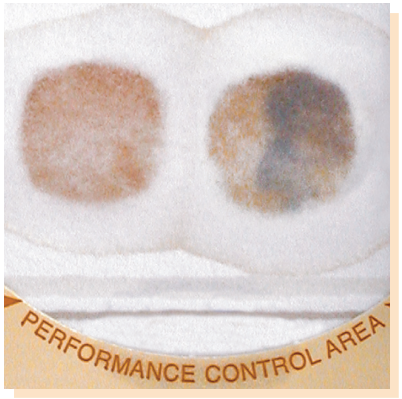
READING & INTERPRETING THE SERACULT PLUS TEST

(This page may be removed and posted for easy reference.)



POSITIVE TEST RESULT

Development of smears in Specimen Test Area did yield a blue color and IS POSITIVE for the presence of occult blood.

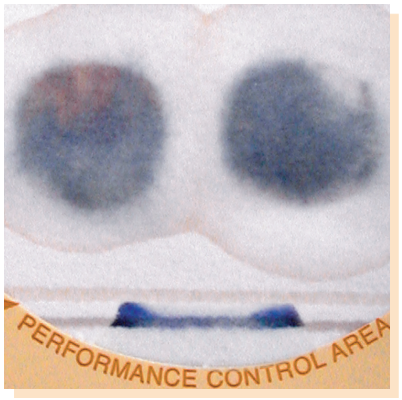


POSITIVE TEST RESULT

Presence of blue color even in only one smear IS POSITIVE for the presence of occult blood.

NEGATIVE TEST RESULT

Development of smears in Specimen Test Area did not yield a blue color. Absence of blue color after development IS NEGATIVE for the presence of occult blood.



PERFORMANCE CONTROL AREA

Development of blue color in the Performance Control Area confirms correct performance of both slide and developer reagents. The shade or intensity of blue color in Performance Control Area is not indicative of the blue color that may be obtained from a positive specimen.

propper Manufacturing Co., Inc.

36-04 Skillman Avenue
Long Island City, NY 11101
Tel. (718) 392-6650 • Fax. (718) 482-8909
www.proppermfg.com

Rev. 04/23