Tryptar is a brand of highly purified crystalline trypsin prepared from mammalian pancreas glands. The enzyme is stable indefinitely at room temperature but when placed in solution approximately 50 per cent of the proteolytic activity is dissipated within four hours. For this reason, tryptar solutions should be prepared freshly each time before use.

Tryptar is effective over a pH range of 5 to 8, exhibiting its greatest activity at about pH of 7. It has a broad spectrum of hydrolytic activity on proteins degrading them to small polypeptides and some amino acids. There is a considerable differential in the destruction of various groups of proteins by tryptar since denatured protein and flat chain molecules, such as fibrin and fibrinogen, are hydrolyzed much more rapidly than other proteins.

Tryptar is not active upon and does not harm living tissues since it has shown that trypsin does not penetrate the viable cell membrane. In addition, each cell contains a specific trypsin inhibitor which protects the cell from proteolytic action of the enzyme. Serum also contains specific and non-specific trypsin inhibitors which counter the effects of tryptar.

Signs of sensitization or clinical antigenicity to tryptar have not been observed. The enzyme may be safely used over prolonged periods or recurrently after long intervals.

Tryptar is a useful agent to the surgeon to remove intrapleural deposits of fibrin. The following reports of cases show the indications, methods, limitations and results obtained from its use for these purposes.

**Report of Cases**

**Case 1:** A 25 year old Negro man, admitted to the hospital on April 6, 1952, had incurred a stab wound of the left side of the chest on April 5, 1952. He had been admitted first to another hospital then transferred to this hospital. The roentgenogram of the chest on admission showed fluid in the left pleural cavity (Figure 1). Intercostal closed catheter drainage, to which suction of about -20 cm. of water was connected, was provided on April 6. Tryptar,† 250,000 Armour units in 20 cc. of Sorenson's Phosphate Buffer Solution was injected through the catheter twice a day from April 7 through April 14. The catheter was clamped for four hours to permit digestion and then suction was reapplied. He was given penicillin and cholomycetin. He also received benedryl in doses of 0.1 gram for the first dose and then 0.05 gram four times a day. The roentgenogram of April 10 (Figure 2) showed little change. The quantity of aspirated blood decreased and the fluid
became serous so that it was possible to remove the catheter on April 14. A considerable diminution in the quantity of fluid in the pleural cavity was noted on the roentgenogram of April 17 (Figure 3). He was discharged from the hospital on April 21. On May 21, he stated that he was asymptomatic and was working at his usual occupation. The roentgenogram of May 21 showed slight thickening of the pleura and obliteration of the costophrenic angle on the left side (Figure 4).

Case 2: A 26 year old Negro man, admitted to the hospital on May 2, 1952 had incurred a stab wound of the right side of the chest on the same day. He had been admitted previously to another hospital where about 500 cc. of blood had been aspirated from the right pleural cavity. He had been transferred to this hospital

![Figure 1: Left hemothorax on April 6, 1952.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21252/)

![Figure 2: Left hemothorax after intercostal closed catheter drainage and treatment with Tryptar on April 10, 1952.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21252/)

![Figure 3: Left hemothorax on April 17. Catheter has been removed.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21252/)

![Figure 4: Roentgenogram of chest on May 21.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21252/)
for further care. The roentgenogram of the chest on May 2 showed a moderate amount of fluid in the right pleural space. Upon aspiration, this was found to be sanguineous. Intercostal closed catheter drainage with suction of about -20 cm. of water was provided on May 2, with about 300 cc. of sanguineous fluid being removed at the time of operation. The patient was given penicillin and benedryl. Tryptar, 200,000 Armour units in 25 cc. of Sorenson's phosphate buffer solution, was injected through the catheter twice a day from May 3 through May 7. The catheter was clamped for three hours to permit digestion after which suction was re-established. The quantity of sanguineous fluid had decreased and the fluid had become serous, so the catheter was removed on May 12. The roentgenogram of

**FIGURE 5**

*Figure 5:* Left empyema on February 28, 1952.

**FIGURE 6**

*Figure 6:* Left loculated collection of fluid with overlying air on March 21, 1952.

**FIGURE 7**

*Figure 7:* Roentgenogram showing diminution of fluid in left pleural cavity on April 5, 1952.

**FIGURE 8**

*Figure 8:* Roentgenogram of chest on April 24, 1952.
May 12 showed a decreased amount of fluid while that of May 20 showed some thickening of the pleura in the lower part of the chest with blunting of the costophrenic angle. He was discharged from the hospital on May 20. On June 20, he stated that he was asymptomatic. The roentgenogram of June 20 showed some resolution of the thickening of the pleura.

Case 3: A 46 year old white man was admitted to the surgical service on February 8, 1952 for the treatment of pain in the back and over the left ilium for about 17 years which was due to rheumatoid arthritis. He denied having symptoms referable to the lungs although the physical examination indicated that pneumonitis and pleural effusion were present on the left side. The roentgenogram of the chest, made on February 9 showed left pneumonitis and pleural effusion. About 1,200 cc. of fluid were aspirated from the pleural cavity on February 16. Aerobic and anaerobic cultures of the fluid were sterile. Acid-fast bacilli were not found by smear or culture. Repeated examinations of the sputum and gastric washings were negative for acid-fast bacilli. He was given penicillin, aureomycin and terramycin at various times during the stay in the hospital. He was transferred to the medical service for further care. The effusion (Figure 5), however, subsequently became purulent and about 50 cc. of foul-smelling green pus were aspirated from the pleural cavity on March 3. A Streptococcus anaerobius and a microaerophilic Streptococcus viridans were cultured from the pus. He was transferred back to the surgical service and an intercostal closed catheter drainage with suction of about -20 cm. of water was provided on March 3. He was given benedryl. Tryptar, 200,000 Armour units in 20 cc. of Sorenson's phosphate buffer solution, was injected through the catheter twice a day from March 3 through March 7. The catheter was clamped for four hours after the injection of tryptar to permit digestion after which the suction was re-established. About 1,500 cc. of pus were aspirated during the first 24 hours. Repeated roentgenograms showed progressive resolution and when the fluid became serous on March 10, the catheter was removed. A loculated collection of fluid with overlying air was noted on March 21 (Figure 6) and this was thought to be the result of bronchopleural fistula. Intercostal closed catheter drainage with suction was re-established on March 21. Tryptar was given in a similar manner from March 22 through April 1. The suction

![Figure 9](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21252/)

*Figure 9: Right pleural effusion on March 15, 1952.*

![Figure 10](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21252/)

*Figure 10: Right empyema after intercostal closed catheter drainage and treatment with Tryptar on March 26, 1952.*
was discontinued and the catheter cut at the chest wall on April 5. The roentgenogram on April 5 showed considerable diminution in the quantity of the fluid (Figure 7). The catheter was removed on April 7. An excellent response was obtained. On April 10, roentgenograms showed some thickening of the pleura. The wound healed and the patient was transferred to the medical service for further care of the rheumatoid arthritis. The roentgenogram of April 24 showed only a blunting of the costophrenic sinus (Figure 8). He was discharged from the hospital on May 8.

Case 4: A 31 year old white man, admitted to the medical service on March 15, 1952 with a history of having a respiratory infection for three weeks, was found to have pneumonitis with pleural effusion on the right side (Figure 9). Aureomycin, penicillin and terramycin were given at various periods during the stay in the hospital. Pus, from which pneumococci were cultured, was aspirated from the pleural cavity on March 18. He was transferred to the surgical service on March 18 and a closed intercostal catheter drainage, with suction of about -20 cm. of water, was provided on the same day. He was given benedryl. Tryptar, 200,000 Armour units in 30 cc. of Sorenson's phosphate buffer solution was injected through the catheter three times a day from March 18 through April 11. The dose was changed to 250,000 units in 20 cc. once a day from April 12 through April 25. The catheter was clamped for four hours after each injection to permit digestion after which the suction was re-established. About 1,800 cc. of pus were aspirated from the pleural cavity in the first 24 hours. A bronchopleural fistula was noted on March 25. Considerable improvement was seen on the roentgenogram of March 26 (Figure 10) with slight additional progress being noted on April 5 (Figure 11). Repeated roentgenograms showed progressive improvement so that it was possible to remove the catheter on April 26. A peripheral zone of increased density over the right lung with obliteration of the right costophrenic sinus was seen on the roentgenogram of May 6 (Figure 12). He was discharged from the hospital on May 9.

Case 5: A 34 year old Negro man was admitted to the medical service on May 21, 1952 with pain in the right side of the thorax. A diagnosis of bronchopneumonia and pleurisy with effusion on the right side was made. He was treated with aureo-
mycin. About 250 cc. of dark amber fluid were aspirated from the right pleural cavity on May 27. The fluid was sterile in aerobic and anaerobic culture. The temperature, however, continued to be moderately elevated. He was subsequently seen in consultation by the surgical service. Aspiration of a loculated area in the right pleural cavity produced about 3 cc. of foul-smelling pus, cultures of which were sterile, aerobically and anaerobically. He was transferred to the surgical service. Intercostal closed catheter drainage with suction of about -20 cm. of water was provided on June 23. At the time of operation about 40 cc. of malodorous pus was aspirated. He received penicillin at this time. Tryptar, 200,000 Armour units in 15 cc. of Sorenson's phosphate buffer solution, was injected through the catheter twice a day from June 24 through June 30. The catheter was clamped for about three hours after injection to permit digestion and then suction was re-established. Benedryl was given during this period. During the treatment with Tryptar, the pus became much thinner. The catheter was removed on July 6. He was discharged from the hospital on July 14. At a follow-up examination on August 14, he was asymptomatic. The roentgenogram of August 14 showed only an area of thickening of the pleura in the right cardiophrenic angle.

Case 6: A 35 year old white man, admitted to the medical service on December 31, 1951 had had a sudden onset of pain in the left side of the chest about one week previously. It was associated with a non-productive cough and fever of an undetermined height. The patient had incurred a gunshot wound of the left side of the chest in 1943. The injury was complicated by empyema which necessitated performance of several operations. The temperature was elevated to 101 degrees F. The roentgenogram of January 3, 1952 (Figure 13) showed left pleural effusion. On January 4, pus was noted draining from the mid-portion of the scar on the left side of the chest wall. Staphylococcus aureus was cultured. He was seen in consultation by the surgical service on January 4 when the diagnosis of an empyema necessitans was apparent. He was transferred to the surgical service and an unroofing of the empyema cavity was done on January 4. About 200 cc. of thick pus were evacuated. Two number 18 French catheters were placed into the base of the wound which was packed open with nylon gauze. Suction of about -20 cm. of water was applied to the catheters in turn. He was given penicillin and...
Figure 15: Roentgenogram of chest on January 14, 1952.

Figure 16: Wound on January 15, 1952.

Figure 17: Roentgenogram of chest on January 28, 1952.
sulfadiazine at various times during the stay in the hospital. Tryptar, 100,000 Armour units in 10 cc. of Sorenson's phosphate buffer solution was injected through one of the catheters daily from January 5 through January 8. The catheters were clamped for four hours to permit digestion and then the suction was re-established. The pack and catheters were removed from the wound on January 8. Tryptar powder was blown into the wound (Figure 14) to form a fine film by a DeVilbiss blower once daily from January 9 through January 15. The roentgenogram of January 14 showed considerable improvement (Figure 15). The wound (Figure 16) became clean. Partial thoracoplasty and closure of the wound was done on January 16. A number 20 French catheter was placed into the base of the wound. Tryptar, 33,000 Armour units in 5 cc. of Sorenson's phosphate buffer solution was injected through the catheters into the wound every six hours from

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**FIGURE 18**

*Figure 18*: Wound on February 19, 1952.

**FIGURE 19**

*Figure 19*: Roentgenogram of chest on May 2, 1952.

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**FIGURE 20**

*Figure 20*: Collapse of right lung and pleural effusion on December 19, 1951.

**FIGURE 21**

*Figure 21*: Roentgenogram of chest on January 23, 1952.
January 17 through January 24. The catheter was clamped for four hours to permit digestion and then the suction was re-established. He was given benedryl. During this period 20 cc. to 50 cc. of sanguinolent fluid were aspirated from the wound daily. The catheter was removed from the wound on January 24 when the main portion was healed. The roentgenogram of January 28 (Figure 17) showed improvement. The tract of the catheter was healed on February 14. The wound (Figure 18) looked good on February 19. He was discharged from the hospital on February 19. On May 2, he stated that he was well and was working full-time as a truck driver. The roentgenogram of May 2 (Figure 19) showed a slight collapse of the lateral wall on the left side and clear lungs.

Case 7: A 25 year old white man, admitted to the hospital on May 4, 1952, had had bronchiectasis for seven years. Bronchography showed dilatation and sacculation of the lingula of the upper lobe and all of the basilar segments of the lower lobe of the left lung and minimal changes in the anterior segment of the right lung. On May 28, the lingula and the basilar segments were resected. Intercostal closed catheter drainage with suction of about 20 cm. of water was provided. However, hemotherorax formed postoperatively. Benedryl was administered. Tryptar, 200,000 Armour units in 25 cc. of Sorenson’s phosphate buffer solution was injected through the catheter into the pleural space twice a day for 11 days. The catheter was clamped for three hours after each injection after which suction was re-established. Large amounts of sanguinolent fluid were aspirated from the pleural cavity. The roentgenograms showed progressive improvement. The catheter was removed on June 18. The temperature however, became elevated and foul-smelling pus was aspirated from the pleural cavity on June 24. Escherichia coli and an unidentified micrococcus were cultured from the pus. Intercostal closed catheter drainage with suction was re-established on June 25. Tryptar was injected into the pleural cavity in a similar manner from June 26 through June 30 when the injections were discontinued due to a lack of the agent. The injections of tryptar were resumed from July 10 through July 14. The infection, however, was not controlled. The pocket was unroofed by resection of the overlying rib on July 15. About 30 cc. of pus were evacuated from the loculation. A small bronchopleural fistula was found at the medial part of the wound. The wound was packed open with nylon into which plain gauze was placed. Tryptar was blown into the wound to form a fine film by a DeVilbiss blower from July 17 through August 4. The cavity gradually became clean. The wound was closed on August 5. The pocket then measured 6 by 3 by 3 cm. and the bronchopleural fistula was still present. The overlying ribs were resected and the intercostal muscles sutured in such a manner as to occlude the bronchopleural fistula. Two number 20 French catheters were inserted into the depths of the wound for air-vent suction and brought out through its anterior end. Flaps of muscle were developed and the pocket filled. Suction of about 20 cm. of water was applied to the catheters which were removed on August 11. The wound healed well. He was discharged from the hospital on September 9 to return for observation for the bronchiectasis in the upper lobe of the right lung. On October 9, he stated that he did not have dyspnea. Very little expectoration was noted although occasionally the sputum was tinged with blood. He had gained 8 pounds. The roentgenogram of October 9 showed some clouding of the lower third of the left lung field. On November 21, he stated that he felt well. He had a little expectoration which was not tinged with blood. The bronchogram of November 21 showed minimal bronchiectasis of the anterior segment of the upper lobe of the right lung.

Case 8: A 56 year old white man, admitted to the hospital on September 14, 1951, had right pneumonectomy for bronchogenic carcinoma on October 9. A bronchopleural fistula was noted on December 10. An intercostal closed catheter drainage, to which suction of about 20 cm. of water was applied, was provided on December
10. A large amount of pus was obtained. Although his general condition improved, the fistula persisted. Suction was discontinued and a short segment of catheter to act as a drain was inserted into the pleural cavity. He was discharged from the hospital to the care of his local physician on February 9, 1952. On his return to the hospital on March 18, the fistula was still present. A catheter was inserted and tryptar, 200,000 Armour units in 5 cc. of Sorenson's phosphate buffer solution was injected once a day from March 23 through April 9. He was postured for two hours to retain the solution. The pus decreased in amount by 50 per cent, became less viscid and lost a part of the foul odor. Evidence of a spread of the infection into the left lung was not seen. On April 11, first stage anterior thoracoplasty was done. He was given penicillin. The drainage from the catheter decreased in amount. The operative wound healed. On May 1, second stage posterior thoracoplasty was done. The fistula closed on May 17. He was discharged from the hospital on May 23.

Proteus vulgaris was cultured from the pus at the site of the drainage. The tract for the catheter healed on May 17. He was discharged from the hospital on May 23, but was admitted to another hospital on June 14 critically ill with dyspnea, cyanosis and jaundice. He died shortly after admission with the autopsy showing pus in the right pleural space, acute and chronic myocarditis and chronic passive congestion of the liver, spleen and kidneys with toxic degeneration.

Case 9: A 63 year old white man was admitted to the medical service on January 28, 1952 for atelectasis of the middle part of the right lung. A diagnosis of tuberculosis of the peritoneum had been made elsewhere previously with enlarged liver and spleen being found at operation. In March 1952, he developed pleural effusion on the right side. Repeated examinations of sputum, gastric washings and fluid from the right pleural cavity were negative for acid-fast bacilli. He was transferred to the surgical service for observation, investigation and further treatment of his disease. Intercostal closed catheter drainage with suction was established on May 23. Tryptar, 200,000 Armour units in 30 cc. of Sorenson's phosphate buffer solution was injected into the right pleural cavity daily from May 23 to June 3. Large amounts of sanguineous fluid were aspirated from the pleural cavity but only moderate clearing occurred. The catheter was removed on June 3. Sanguineous fluid was thereafter obtained by aspiration at irregular intervals. The leukocyte count which was 14,100 per cmm. on June 5 rose to 43,200 per cmm. on July 1. Purulent fluid was subsequently aspirated from the right pleural cavity. Right thoracotomy to obtain pleura or lung for biopsy and to provide drainage was done on July 22. A moderate amount of necrotic debris and clotted blood was present. The lower lobe was decorticated. The underlying lung was free of disease. Intercostal closed catheter drainage was provided. Biopsy showed tuberculous pleurisy and occasional acid-fast bacilli were demonstrated. Streptomycin and hydrazid were started but he did poorly. The leukocyte count rose to 280,200 per cmm. and then to 302,500 on August 30. Although it was strongly suspected during the long period of illness that he had chronic myeloid leukemia, it was the feeling of the hematologist that the elevated leukocyte count was due to a leukemoid reaction. He died on August 30. Tuberculous empyema with secondary infection of the right side, extensive tuberculosis of the lymph nodes and chronic myeloid leukemia were found at autopsy.

Case 10: A 26 year old Negro man had resection of the upper lobe and the superior segment of the lower lobe of the right lung and thoracoplasty done for tuberculosis on May 29, 1952. One catheter was brought out in the first intercostal space in the anterior axillary line and a second in the eighth intercostal space in the posterior axillary line. A water seal was provided for the anterior catheter while suction of about —20 cm. of water was applied to the posterior catheter. Due to excessive drainage of sanguineous fluid from the chest, the suction was discontinued in a short time after operation. About 1,300 cc. of sanguineous fluid
were aspirated from the chest during the first 24 hours after operation. Since the posterior catheter was not functioning, it was removed on May 31. Aspiration of the pleural space produced only a few cc. of blood. The roentgenogram of June 2 showed a diffuse density over the right side and it was apparent that clotted hemothorax was present. The anterior catheter was removed and closed intercostal catheter drainage through the fifth space to which suction of about —20 cm. was attached, was provided on June 2. He was given benedryl. Tryptar, 200,000 Armour units in 25 cc. of Sorenson’s phosphate buffer solution, were injected through the catheter four times a day from June 3 through June 7. The catheter was clamped for four hours after injection to permit digestion after which suction was re-established. About 375 cc. of sanguineous fluid were aspirated during the first 24 hours after treatment with tryptar was started and about 800 cc. during the second. Additional fluid was not obtained. The catheter was removed on June 10. Bronchoscopy with aspiration of a moderate amount of secretion was done on June 5 and repeated on June 9 when only a small amount of mucoid secretion was obtained. Tryptar, 50,000 Armour units in 10 cc. of Sorenson’s phosphate buffer solution, was put into the right main bronchus through a catheter passed through the bronchoscope. Repeated roentgenograms showed progressive resolution of the effusion and on June 16, the lower lobe was considerably expanded. He was transferred to the medical service for further care on July 7. On July 30, the roentgenogram showed further expansion of the lower lobe with considerable resolution of the effusion. On November 10, the roentgenogram showed good aeration of the remaining portions of the right lung and only minimal thickening of the pleura.

Case 11: A 34 year old Negro man, admitted to the surgical service on December 17, 1951 was found to have tuberculosis of the right lung in August 1944. He was on bed rest until June 1945 when pneumothorax was established and continued until August 1949. At the time of re-examination in November 1950, hydropneumothorax was present. Sanguineous fluid was aspirated from the pleural cavity in January 1951 and during the next three months. The sputum had been negative for acid-fast bacilli since 1945. He was referred to the hospital for decortication of the right lung. Repeated examinations of the sputum and gastric washings were negative for acid-fast bacilli. The roentgenograms of the chest showed 50 per cent collapse of the right lung with a fluid level at the seventh rib posteriorly (Figure 20). Closed intercostal catheter drainage was provided on January 2, 1952. Five injections of tryptar, 200,000 Armour units, in 20 cc. of Sorenson’s phosphate buffer solution were given at irregular intervals between January 2 and January 17. Benedryl was administered. He also received penicillin and chloramphenicol. The fluid in the pleural cavity was serous at first. During the treatment with tryptar, large amounts of fibrinous material were noted in the aspirated fluid but blood was never seen. The temperature became elevated to as high as 104 degrees F. during this period. The lung, however, did not expand (Figures 21 and 22) and decortication was done on February 7. A moderate amount of fibrinous material was still present in the pleural cavity although the pleural space was clean. The peel was about 0.6 cm. thick in some places. Intercostal closed catheter drainage with suction of about —20 cm. of water was provided. The roentgenogram showed good progress (Figure 23) and the catheter was removed on February 18. He was discharged on March 11. On June 12, he stated that his activity was normal although he had not yet returned to work. The roentgenogram of June 12 (Figure 24) showed slight thickening of the pleura over the lateral surface of the right lung with obliteration of the costophrenic sinus.

Comment

The results obtained from the use of tryptar in hemothorax are encouraging. Tryptar can be given by thoracentesis but it is believed that
better results will be more quickly achieved with closed catheter drainage with suction. The accumulation of large amounts of fluid in the pleural cavity from proteolysis after the injection of tryptar may cause a shift of the mediastinum and cardiorespiratory embarrassment. This complication can be easily avoided by the use of a catheter. The heavier sediment in the pleural space can often be washed out with physiologic saline through the catheter before the next treatment with tryptar. The best results from the enzyme will be obtained when treatment is started immediately after hemorrhage has stopped. If organization of the clot has started, it is increasingly difficult to obtain liquefaction because the enzyme does not affect living cells. Enzymatic treatment, nevertheless, may occasionally succeed despite delay. Treatment is given at least twice a day since a considerable portion of enzymatic activity is lost within four hours. The catheter is clamped for about four hours to permit digestion after which suction is re-established. The duration of treatment is guided by the temperature curve, the color of the aspirated fluid and repeated roentgenograms of the chest. The body temperature usually returns to normal when the blood has been removed from the pleural cavity. The persistence or recurrence of fever when only serous fluid is obtained should arouse suspicions of loculated blood or pus. Tryptar should be stopped when the aspirated fluid becomes serous unless loculations are present. Repeated roentgenograms of the chest are helpful in determining whether free fluid or loculations of fluid are present.

Wounds of the lung are sealed by fibrin in the normal process of repair and therefore the creation of bronchopleural fistula from the use of tryptar is possible. This complication has not been seen.

Benedryl was given to these patients receiving tryptar to decrease the possibility of allergic reaction to the enzyme. A histamine-like response to the enzyme was not seen.

The chosen chemotherapeutic and/or antibiotic agents should be given orally or parenterally before the results of culture of the aspirated fluid are known because all traumatic hemothoraces are potentially or actually infected. The agent may be changed when the result of the culture is learned.

The principles of treatment of pyogenic empyema are essentially those of hemothorax. A thick exudate may necessitate the use of tryptar more frequently than twice a day. The proteolytic action of the enzyme on the pleural surfaces will permit better contact and more efficient action of the selected antibacterial drug. Loculations will be broken down and the enclosed bacteria opened to the chosen drug. A bronchopleural fistula in a patient with a pyogenic empyema is not a contraindication to the use of tryptar. If necessary, however, additional surgical procedures to obliterate the bronchopleural fistula, should be done.

Tuberculosis is not a contraindication to the use of tryptar. The thick pus in the empyema cavity is converted into thin material which lends itself to ready aspiration. Care must be taken when tryptar is used in tuberculous empyema in the presence of a bronchopleural fistula since the
thin pus may be aspirated into other portions of the lungs. A thick pleura, which becomes well organized and is relatively avascular, does not lend itself to proteolysis. Tryptar may be tried in such instances since, although a complete debridement may not be affected, the pleural cavity will be prepared for manual decortication.

SUMMARY

Tryptar provides the surgeon with another excellent therapeutic agent for the treatment of intrathoracic diseases. Fibrin is digested without harm to living tissues. Blood and pus are liquified and can be more easily removed. The excellent results obtained from the use of tryptar in this small series of patients with intrathoracic diseases suggests that further trial be given to the use of the enzyme in similar conditions.

RESUMEN

El triptar proporciona al cirujano un excelente medio terapéutico para el tratamiento de las afecciones intratorácicas. La fibrina es digerida sin daño para los tejidos vivos. La sangre y el pus son licuados y pueden más fácilmente extraerse. Los excelentes resultados obtenidos del uso del triptar en esta pequeña serie de enfermos con enfermedades intratorácicas sugiere que se use más esta enzima en condiciones similares.

RESUME

Le “tryptar” donne au chirurgien une nouvelle possibilité thérapeutique excellente pour le traitement des affections intra-thoraciques. La fibrine est digérée sans créer le moindre dommage aux tissus vivants. Le sang et le pus sont liquifiés et peuvent être retirés beaucoup plus facilement. Les excellents résultats qui ont été obtenus par l’usage du “tryptar” sur un petit nombre de malades atteints d’affections intra-thoraciques que les auteurs ont suivis, font penser que des essais doivent être poursuivis dans des conditions comparables.

REFERENCE