

Cystic Fibrosis and Homoeopathy

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Definition

Cystic fibrosis (CF) is an inherited disease that affects most of the entire human body organs and results in an early death in most cases. (Psora/ Syphilis)

History

This disease was discovered by Dorothy Andersen in 1938, where she studied the pancreatic, lungs and intestine symptoms and its characteristics. Andersen was the first to establish that CF is a recessive disease (Psora). The sweat test, which is a routine test for diagnosis of CF was initially highlighted by Agnese in 1952. Riordan et al., discovered the DF508 cystic fibrosis mutation and also the gene responsible for the disease (Syphilis).

Incidence

CF is the most common genetic disorder existing in the European population, where one in twenty-two persons have one affected gene with CF, and in all Caucasians, one in 2500 live births are affected. In North America, specifically in USA, the ratio of CF incidence is one in 3900 born infants, and CF carriers represent 4% of the population.

Signs and symptoms

Lungs

Cystic fibrosis is a disease responsible for a defect in chloride transport in the epithelium (psora), and as a result it causes damage in the lung, pancreas and other concerning organs (Syphilis), resulting in early death in most cases. The figure below depicts the organs could be affected by CF. The CF symptoms developed in the lungs are due to the thick mucus accumulation in the airways (Psora/ Sycosis) which cause inflammation (Psora/ Sycosis). This media is suitable for the growth of bacteria and inflammation may result in pneumonia and hemoptysis (Pseudopsora). Due to these serious problems with the lungs, it is hard to supply the body with sufficient oxygen, resulting in hypoxia (Psora). Additional respiratory supports or ventilators are essential in the development stages of the lung damage. In severe cases, lung transplantation may be necessary.

Pancreas

CF has an impact on thickening the pancreatic juice (Psora/ Sycosis), which contains the necessary enzymes, supplied to the small intestine through the duodenum, for food digestion. The retardation in the movement of the pancreatic juice due to its high viscosity often leads to an onset of pancreatitis (Pseudopsora).

Intestines

CF causes defective absorption through intestines (Psora/ Syphilis). Several complications as a result of the deficiency of the digested nutrients include malabsorption and poor growth (Psora/ Syphilis). Individuals with such conditions require external supplementary vitamins and essential nutrients.

Bones

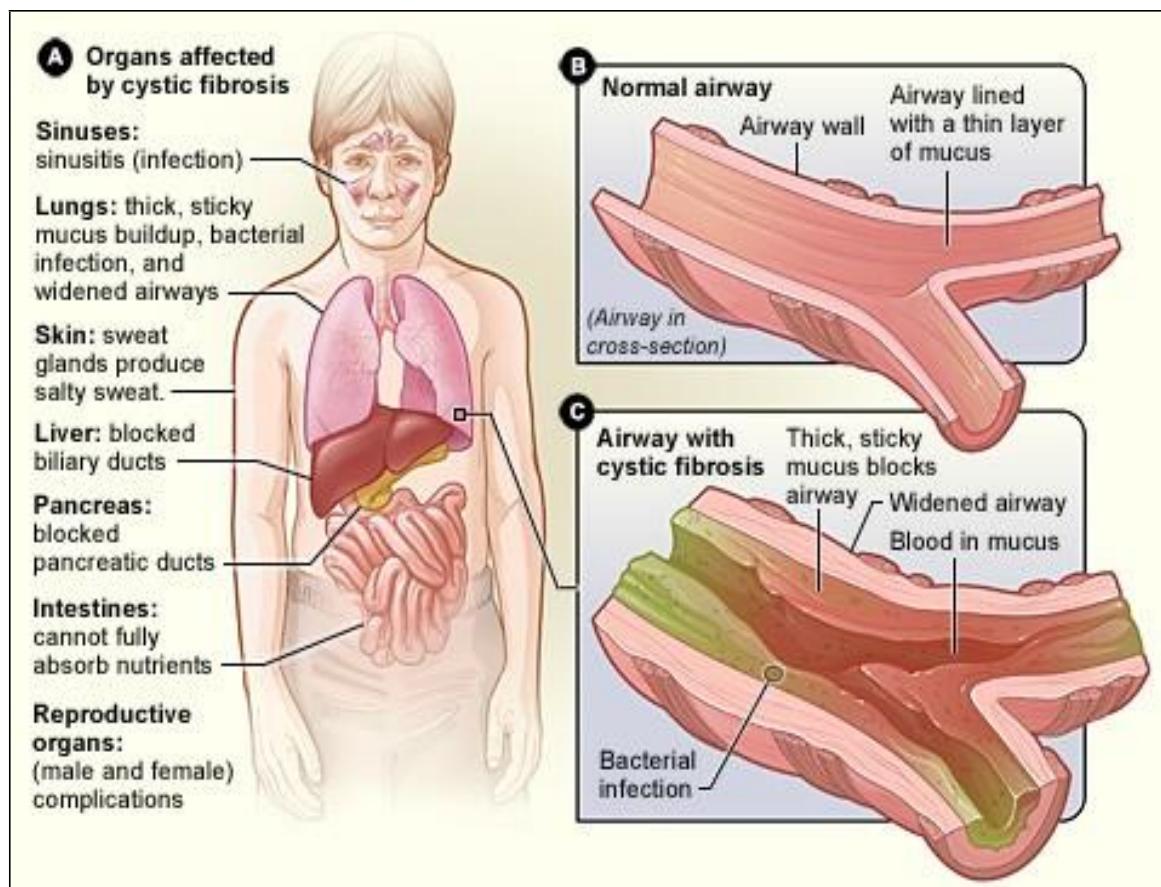
CF can develop weakened bones as a result of vitamin D deficiency due to malabsorption and be more prone to fractures (Syphilis).

Endocrine

Certain type of diabetes are also related to CF, namely, Cystic Fibrosis Related Diabetes (CFRD), which results from pancreas damage leading to a deficiency in insulin hormone levels (Psora/ Syphilis/ Pseudopsora).

Liver

The liver is affected by the formation of the thick bile secretions (Psora/ Sycosis), which can block the bile ducts and cause liver damage (Psora/ Syphilis). The development of liver cirrhosis (Sycosis/ Syphilis) affects the important functions of the liver, critical to correct body functioning, such as detoxification and blood proteins production.

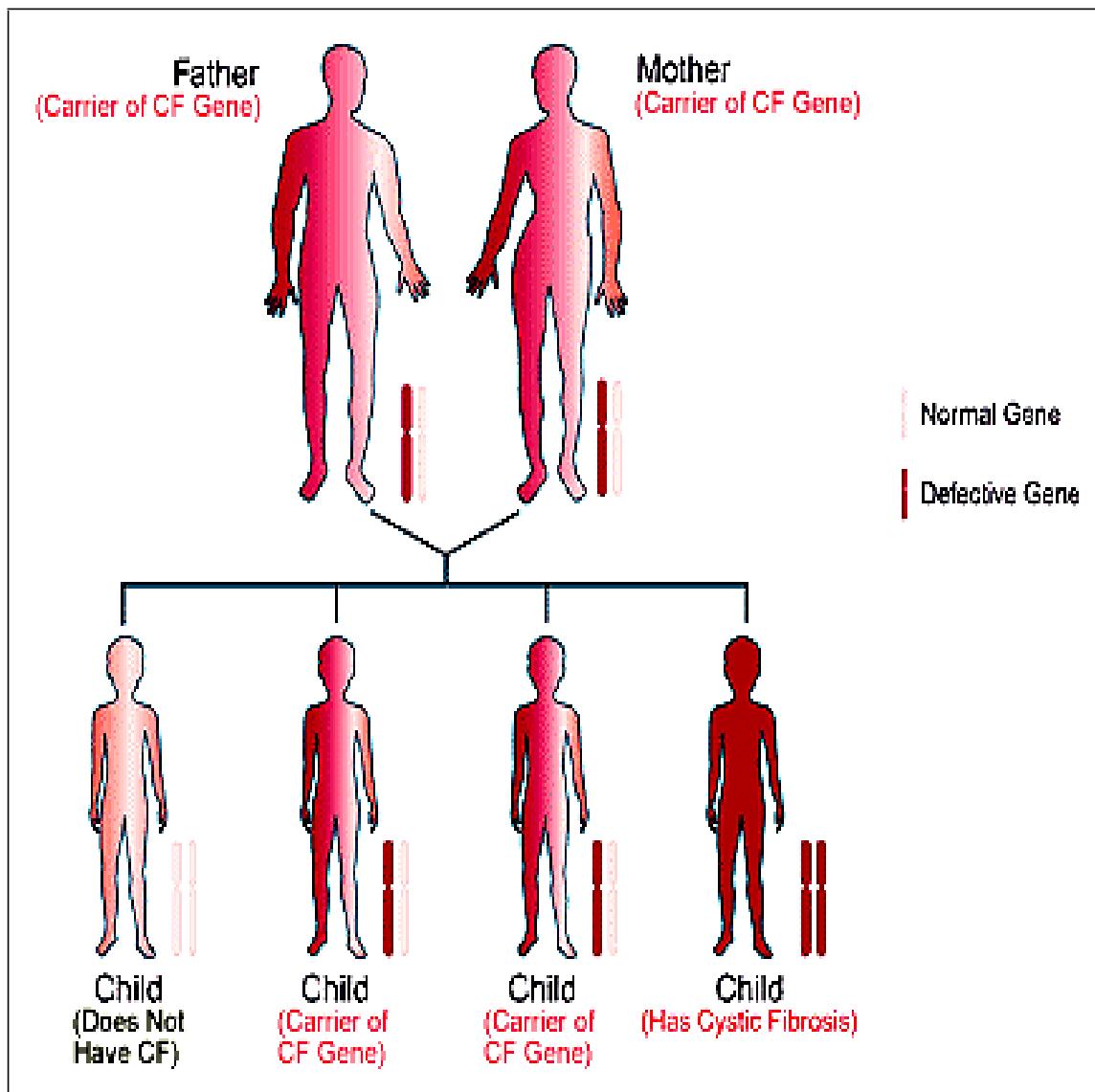


The organs affected by Cystic fibrosis (A), a cross section in a normal airway (B) and a cross section in an airway affected with cystic fibrosis

Cystic fibrosis mutations

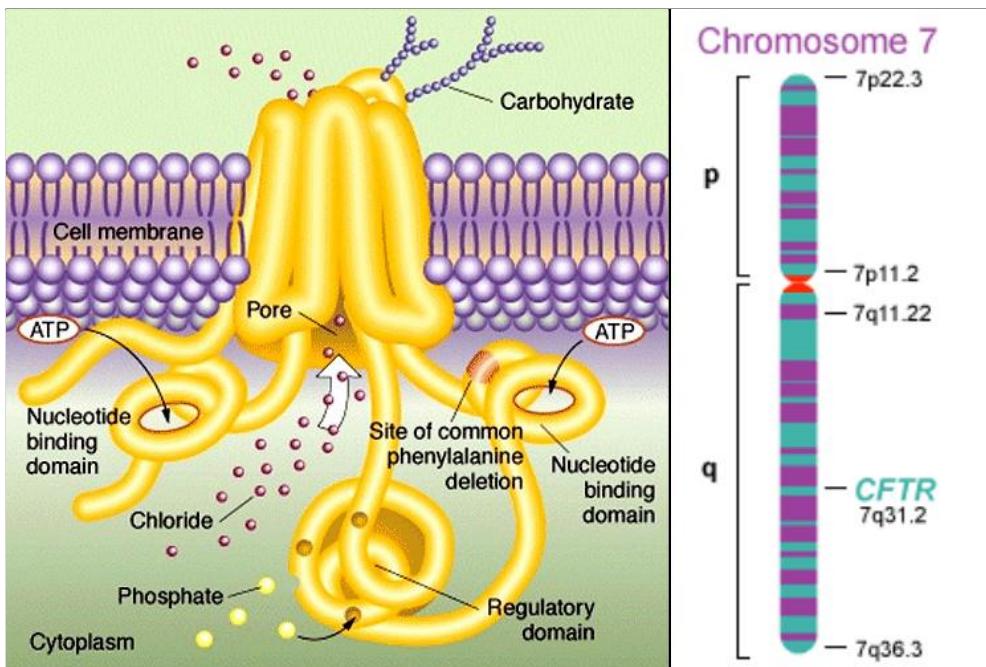
Cystic fibrosis is expressed when both genes are mutated in chromosome 7, and CF is thus considered an autosomal recessive disease (Psora/ Syphilis). The CF gene susceptible to mutation is called the Cystic fibrosis transmembrane conductance regulator gene (CFTR) (Psora/ Sycosis). The translated protein is responsible for the formation of the chloride channel, which is necessary for chloride ion transportation to many organs such as pancreas, lungs, sweat glands, intestine and kidneys.

The chloride ion channel (translated 1480 amino acid protein from CFTR gene) consists of two symmetrical halves, where in each half, there are six membrane-spanning segments and a nucleotide-binding domain and both halves are joined together via a cytoplasmic regulatory domain (R-domain). The protein mass distributed within the cell membrane in a way that 77% of the protein is in the cytoplasm, 19% in membrane spanning segments, and 4% in extracellular loops.



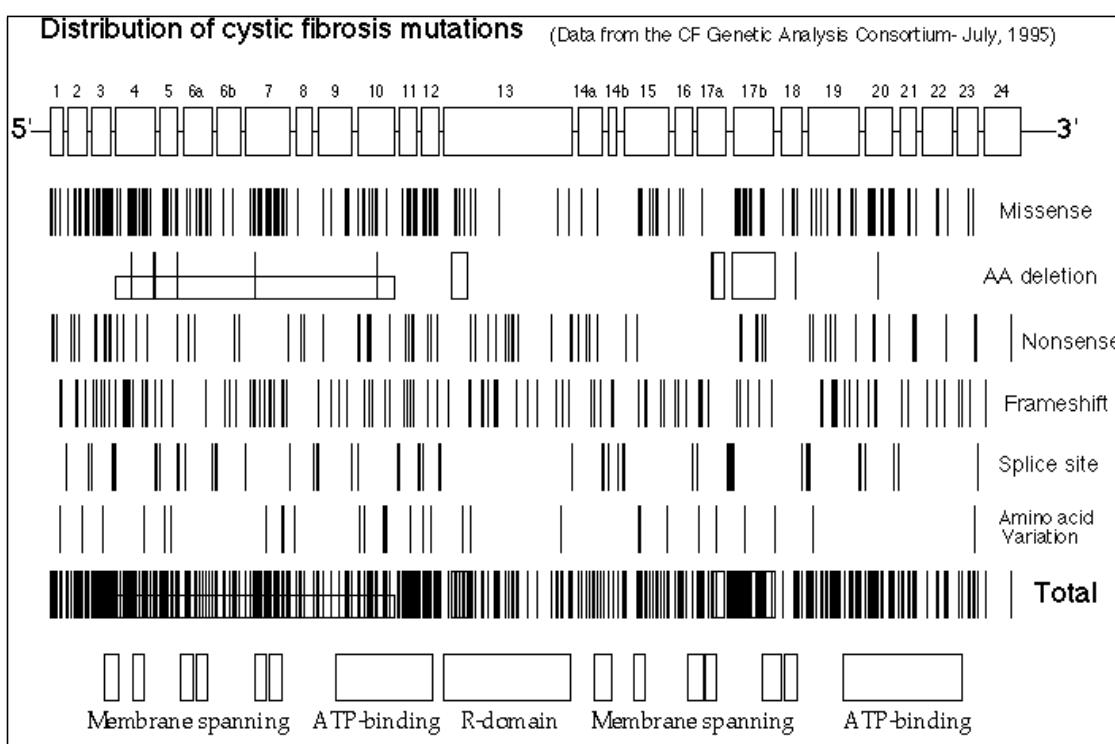
The inheritance of Cystic fibrosis

The structure of the chloride ion channel (translated 1480 amino acid protein from CFTR gene) is given in next figure.



The CF transmembrane conductance regulator gene (right) and the produced CFTR protein

More than 1,000 mutations have been identified in the CF gene, but a few common mutations cause disease in most patients. Mutations have been divided into six classes based mainly on the molecular fate of CFTR. DF508 is the most common mutation in which there is a deletion of phenylalanine at position 508 in the amino acid sequence of CFTR (DF508). However, its frequency varies between ethnic groups, accounting for 70 per cent of all cystic fibrosis mutations in the white populations of Britain and US but fewer than 50 per cent in southern European populations. CFTR mutations are correlated with disease severity.



Different types of genetic mutations included in cystic fibrosis

Cystic fibrosis diagnosis

Sweat analysis

Since the discovery of the distinguishable salty character of the skin sweat belonging to individuals suffering from CF, it has been employed as a routine test for diagnosis of CF disease.

Blood analysis

Another specific diagnosis method is the chemical analysis of immunoreactive trypsinogen compound, which has high blood levels in the newborn babies suffering from CF. The analysis is done through blood test screening in the sixth day after birth.

Genetic analysis

Other important technique is genetic testing where genetic analysis is applied to some blood cells or cells scraped from the internal cheek. The advantage of this test is that it could be used for screening of carrier persons, who do not express the disease but are susceptible to have CF affected children. Thus, this test is essential couples with a family history of the cystic fibrosis.

Treatment

Many efforts have been made to developed methods for CF treatment, including gene therapy and supplement of proteins, which have limited benefit to the CF patients. Unfortunately, to date, these kinds of treatment failed to cure CF. The best available option for CF patients is to take antibiotics and an external supplement of nutrients and vitamins. The devices to clear the lung mucus may be used. These treatments aim to suppress the progressive inflammations and to minimize the disease symptoms.

Prognosis

Within the development of the CF treatment, patients could live to 30 years, which was not observed 20 years ago, when individuals suffering from CF normally died in childhood.

Homoeopathic Treatment

Homoeopathy is the only effective method of treatment.

Cystic fibrosis abrom-a. acet-ac. **ACON.** adren. aesc. **Aeth.** aether **Agar.** agn. ail. alet. **All-c.** all-s. allox. aloe alum-p. alum-sil. alum. **ALUMN.** am-act. am-be. **Am-br.** am-c. **AM-CAUST.** am-i. am-m. **Ambr.** **Ammc.** anac. anis. ant-ar. **Ant-c.** **Ant-i.** ant-s-aur. **ANT-T.** anthraco. **Apis** apoc. aq-pet. **Aral.** Arg-met. **ARG-N.** arist-m. **Arn.** **Ars-br.** **Ars-i.** ars-s-f. **ARS.** arum-d. arum-i. arum-t. **ASAF.** asar. asc-c. asc-t. aspar. atro. aur-ar. aur-i. aur-m-n. aur-m. aur. **Bac.** **Bad.** bals-p. **Bapt.** Bar-c. bar-i. bar-m. bar-s. **Bell.** Benz-ac. beryl. bond. **Bor-ac.** borx. **Bov.** **Brom.** **BRY.** bufo **Cact.** cadm-met. calad. calc-act. calc-ar. **Calc-f.** calc-hp. calc-i. **Calc-p.** calc-s. calc-sil. **CALC.** camph. **Cann-s.** canth. caps. carb-ac. **Carb-an.** **CARB-V.** carbn-h. **Carbn-s.** carc. **Card-m.** **Carl.** cas-s. cassia-s. castor-eq. **Caust.** **Cham.** **CHEL.** chim. chin-b. **Chin.** chinin-ar. chinin-s. **Chion.** **Chlor.** chlorpr. cimic. cinnb. **Cist.** clem. cob-n. cob. **CO-C.** coca cocc. cod. coff. colch. coloc. **Con.** cop. corn-f. corn. cortico. cortiso. cot. croc. crot-h. crot-t. cub. cund. cupr-act. cupr-ar. cupr-n. **Cupr.** cur. **Cycl.** daph. **Dig.** digin. diosm. **Dulc.** elaps erio. ery-a. eucal. euon. eup-per. eup-pur. euphr. eupi. fago. **Ferr-ar.** **Ferr-i.** ferr-m. **FERR-P.** **Ferr.** ferul. fl-ac. **Form.** gal-ac. galeg. **Gels.** glon. glyc. **Graph.** grin. **Guaj.** **Gymne.** ham. hecla hed. hell. **Helon.** **HEP.** hepat. Hippoz. hura **HYDR.** hydrang. hygroph-s. **Hyos.** hyper. iber. ign. indg. indgf-a. ins. **Inul.** **Iod.** **Ip.** irid-met. iris jug-c. kali-act. kali-ar. **KALI-BI.** Kali-br. **Kali-c.** kali-chl. **Kali-hp.** Kali-i. **Kali-m.** Kali-n. kali-p. kali-s. kali-sil. kalm. kiss. **Kreos.** Lac-ac. **Lac-c.** lac-d. Lach. Lachn. lact. lappa lath. **Laur.** lepi. lept. linu-c. lipp. **LOB.** **LYC.** lycps-v. m-ambo. mag-act. mag-c.

mag-m. mag-o. mag-p. mag-s. mang-act. mang. med. meli-xyz. meny. Merc-c. merc-cy. merc-d. Merc-i-f. merc-i-r. merc-n. merc-ns. merc-pr-r. merc-sul. MERC. Mez. Mill. morb. morph. mosch. Mur-ac. murx. myric. myrt-c. naja naphtin. nast-o. nat-ar. NAT-C. nat-lac. NAT-M. nat-ox-act. nat-p. NAT-S. NIT-AC. nux-m. nux-v. oci-sa. oena. ol-an. Ol-j. Olnd. onos. op. orthos-s. osm. ox-ac. oxyg. Paeon. pall. pancr. Par. petr. Ph-ac. Phase. phlor. PHOS. Phyt. pic-ac. pilo. pin-s. plan. PLAT. plb. podo. psil. Psor. PULS. pyrog. quas. quill. rad-br. rad-met. ran-b. raph. rat. rhod. rhodi. Rhus-a. RHUS-T. Rumx. Ruta Sabad. sabin. sacch-l. sacch. sal-ac. SAMB. Sang. sangin-n. sanic. sarcol-ac. sars. sec. sel. senec. SENEGR. Sep. Ser-ang. SIL. silphu. skat. spig. Spong. Squil. STANN. staph. stict. Stram. stront-c. stroph-h. suis-chord-umb. sul-ac. sul-i. sulfonam. SULPH. sumb. suprar. Symph. syph. SYZYG. tarent. tep. TER. Terebe. term-a. thal. ther. thuj. thyr. til. tub-a. TUB. Uran-n. Urea ust. vanad. vario. VERAT-V. Verat. vichy-g. vinc. viol-o. viol-t. vip. visc. wies. x-ray zinc-chr. zinc-p. Zinc.

ABDOMEN - CIRRHOSIS of liver am-be. ars-i. ars. Aur-m-n. aur-m. aur. calc-ar. Card-m. cas-s. chin. chlorpr. crot-h. Cupr. cur. diosm. dulc. euon. Hep. Hydr. iod. kali-bi. kali-i. lact. lyc. mag-m. merc-d. merc. Mur-ac. nast-o. nux-v. Phos. plb. quas. Sulph. urea vip.

CHEST - INFLAMMATION – Lungs ACON. aesc. Agar. All-c. am-c. am-i. am-m. Ammc. anac. ant-ar. Ant-c. ant-i. ANT-T. Apis Arg-n. Arn. Ars-i. ars-s-f. ARS. arum-t. aur-m. Bad. Bapt. bar-c. bar-i. Bell. Benz-ac. beryl. Brom. BRY. Cact. cadm-met. calc-s. calc-sil. Calc. camph. Cann-s. canth. caps. carb-ac. Carb-an. CARB-V. Carbn-s. cham. CHEL. chin-b. Chin. Chlor. coff. colch. Con. cop. corn-f. corn. crot-h. Cupr. Dig. dulc. Elaps eup-per. Ferr-ar. Ferr-i. FERR-P. Ferr. Gels. HEP. Hippoz. Hyos. ign. Iod. Ip. kali-ar. Kali-bi. Kali-br. Kali-c. Kali-chl. Kali-i. kali-m. Kali-n. Kali-p. Kali-s. Kreos. Lach. Lachn. Laur. LOB. LYC. lycps-v. meli-xyz. MERC. Mill. morb. myrt-c. nat-ar. Nat-m. nat-ox-act. Nat-s. Nit-ac. nux-v. oci-sa. ol-j. op. Ph-ac. PHOS. podo. Psor. PULS. pyrog. ran-b. RHUS-T. rumx. ruta Sabad. Sang. sec. SENEGR. SEP. Sil. skat. spig. spong. Squil. stann. Stram. stroph-h. sul-ac. sul-i. SULPH. sumb. Ter. tub-a. tub. VERAT-V. Verat. x-ray

EXPECTORATION – GELATINOUS acon. agar. aloe Alumn. ARG-MET. Arg-n. arn. bar-c. bry. Cact. chin. chinin-s. coc-c. cortiso. cupr. cur. dig. Ferr. hyper. kreos. laur. lyc. med. SAMB. sel. Sil. sulph. viol-o.

EXPECTORATION – GLAIRY Arn. carbn-h. cist. linu-c. lipp. NAT-M. Nat-s. pall. sang.

EXPECTORATION – HARD agar. am-m. ant-c. bry. calad. Con. dig. digin. fago. hep. iod. kali-bi. kali-c. kreos. lach. mang. NAT-C. nat-s. ox-ac. phos. sep. Sil. Spong. Stann. staph. stront-c. sul-i. sulph. thuj.

EXPECTORATION – MEMBRANOUS alum-sil. am-caust. Brom. calc-act. chinin-s. hep. iod. ip. Kali-bi. kali-n. Merc-c. SPONG.

EXPECTORATION – STRINGY aesc. agar. alum. ALUMN. ammc. Aral. Arg-met. arg-n. ars-i. arum-i. asaf. calc-s. calc. Caust. chinin-s. cimic. cinnb. cob-n. Coc-c. cupr-n. ery-a. ferr. hydr. iber. KALI-BI. Lach. lob. mag-m. Phos. phyt. rumx. ruta sang. sanic. seneg. stann. stict. sulph.

EXPECTORATION – THICK abrom-a. acon. agar. aloe Alumn. am-m. ambr. ant-c. Ant-i. ant-t. aq-pet. Arg-met. ARG-N. ars-s-f. Ars. arum-d. arum-i. asaf. atro. aur-m. bar-c. bell. borx. brom. bry. Cact. calc-s. calc-sil. Calc. canth. carb-ac. carb-an. carb-v. cassia-s. Caust. chlor. Cist. cob. Coc-c. cot. Cycl. dig. Dulc. erio. ery-a. eucal. eupi. ferr-ar. ferr-i. ferr-p. ferr. ferul. glon. graph. grin. ham. HEP. hepat. hura HYDR. inul. iod. ip. KALI-BI. kali-c. kali-chl. kali-i. Kali-m. kali-p. kali-s. kalm. kreos. Lac-c. laur. lepi. LyC. mag-m. mang. merc-i-r. Merc. mur-ac. naja nat-c. nat-p. nat-s. nit-ac. oena. ol-j. op. ox-ac. phos. Phyt. psil. Puls. pyrog. raph. rhodi. rumx. ruta sabad. sacch. samb. sang. sars. sel. senec. seneg. Sep. SIL. Spong. squil. Stann. staph. stram. sulph. syph. tarent. ther. thuj. TUB. ust. vario. zinc.

EXPECTORATION – TOUGH acon. aesc. agn. All-c. Alumn. ambr. anac. anis. ant-c. Ant-t. aral. ars-i. Ars. atro. aur-ar. aur-i. aur. Bac. bell. bov. Bry. CALC. Cann-s. canth. Carb-an. carb-v. carl. Caust. cham. cist. cob. Coc-c. cocc. cupr-act. cupr. Dulc. euphr. grin. HEP. indg. Iod. iris KALI-BI. kali-c. kali-sil. Lac-c. lach. mag-c. mag-m. mang. merc-i-r. mez. nux-m. nux-v. ol-an. par. petr. ph-ac. phos. phyt. puls. Rumx. ruta samb. sang. sanic. senec. seneg. Sep. sil. spong. squil. STANN. staph. sul-i. tarent. thuj. verat. vinc. Zinc.

EXPECTORATION – VISCID acet-ac. acon. Agar. agn. ail. All-c. all-s. aloe alum-p. alum-sil. alum. ALUMN. Am-br. Am-c. AM-CAUST. am-m. Ambr. ammc. anac. ant-c. ant-i. ant-s-aur. ant-t. aq-pet. aral. ARG-MET. ARG-N. ars-i. ars-s-f. Ars. arum-i. asaf. asar. asc-t. aspar. aur. Bac. Bad. bals-p. Bar-c. bar-i. bar-m. bar-s. bell. borx. Bov. Bry. bufo Cact. calc-i. calc-s. calc-sil. Calc. Cann-s. canth. carb-ac. Carb-v. Carbn-s.

Caust. Cham. chel. chin. chinin-ar. chion. cimic. cob. COC-C. coca cocc. colch. crot-t. cupr-act. Cupr. dig. Dulc. eucal. euphr. ferr-ar. Ferr-i. ferr-p. ferr. graph. grin. hell. HEP. hepat. HYDR. hyper. iber. indg. Iod. Ip. jug-c. kali-ar. KALI-BI. Kali-c. Kali-hp. kali-m. kali-n. kali-p. kali-s. kali-sil. kreos. lac-ac. Lac-c. lach. laur. lepi. lyc. m-ambo. mag-c. mag-m. mang-act. Mang. med. Merc-c. merc-sul. merc. Mez. morph. myrt-c. naja naphtin. Nat-ar. nat-c. nat-m. nat-p. nat-s. Nit-ac. Nux-v. oena. ol-j. Olnd. onos. op. osm. Paeon. Par. petr. ph-ac. PHOS. Phyt. plb. psil. Psor. PULS. Pyrog. quill. raph. rhus-t. Rumx. ruta sabad. sabin. SAMB. sang. sangin-n. sec. SENEGR. Sep. Sil. silphu. spig. Spong. squil. STANN. Staph. sul-ac. sul-i. sulph. tep. thuj. tub. ust. verat. visc. wies. x-ray zinc-chr. zinc-p. Zinc.

GENERALS - BONES; complaints of Arg-met. ASAFA. aur. Calc-f. Calc-p. Calc. castor-eq. chin. cocc. cupr. daph. eup-per. fl-ac. hep. kali-bi. kali-i. lyc. merc-pr-r. merc. mez. Nit-ac. PH-AC. Phos. Phyt. PULS. pyrog. rhod. rhus-t. Ruta sel. sil. staph. Sulph. syph.

GENERALS - BRITTLE BONES Asaf. bufo calc-f. calc-p. Calc. carc. chel. cupr. fl-ac. Lac-ac. LYC. MERC. par. Ph-ac. phos. rad-br. ruta SIL. SULPH. Symph. thuj. thyr.

GENERALS - CACHEXIA - accompanied by cough nux-v. Phos. puls. stann.

GENERALS - CACHEXIA acet-ac. arg-met. arg-n. arn. ars-i. ARS. bad. bond. calc. caps. carb-ac. chim. chin. clem. Coc-c. cund. fl-ac. Form. hippoz. hydr. Iod. irid-met. Kali-bi. lath. mang. merc-n. merc-ns. merc. morph. mur-ac. nat-m. NIT-AC. phos. phyt. pic-ac. plb. sacch. sec. seneg. suis-chord-umb. thal. thuj. vanad. vip. x-ray

GENERALS - DIABETES MELLITUS - hepatic form Ars-i. ars. bry. calc. cham. chel. kreos. Lac-ac. lept. lyc. nat-p. Nux-v. Uran-n.

GENERALS - DIABETES MELLITUS - insulin dependent ins. nat-p. sulph.

GENERALS - DIABETES MELLITUS - Pancreas; from complaints of iris pancr. phos.

GENERALS - DIABETES MELLITUS abrom-a. adren. aether all-s. allox. aloe alumn. am-act. anthraco. apoc. arg-met. arist-m. Ars-br. ars. asc-c. aspar. aur-m-n. aur. Bor-ac. bov. calc-p. calc-sil. calc. canth. carb-ac. carb-v. carc. card-m. Carl. caust. chel. chim. Chion. cod. coff. coloc. con. cop. cortico. cortiso. cub. cupr-ar. cupr. cur. eup-pur. ferr-i. ferr-m. ferr-p. fl-ac. gal-ac. galeg. glyc. Gymne. hed. helon. hydrang. hygroph-s. indgf-a. ins. Inul. iod. iris kali-act. kali-br. kali-chl. kali-p. kiss. kreos. Lac-ac. lac-d. lach. lyc. lycps-v. mag-act. mag-o. mag-p. mag-s. mang-act. med. meny. merc-d. merc. morph. mosch. murx. nat-lac. nat-m. nat-p. NAT-S. nit-ac. Op. orthos-s. oxyg. pancr. ph-ac. Phase. phlor. phos. pilo. plan. plb. podo. rad-br. rad-met. ran-b. rat. Rhus-a. rhus-t. sacch-l. sal-ac. sanic. sarcol-ac. sep. Ser-ang. sil. Squil. stict. stront-c. sul-ac. sulfonam. sulph. syph. SYZYG. tarent. TER. Terebe. term-a. thuj. thyr. Uran-n. Urea vanad. vichy-g.

GENERALS - DISCHARGES - curdled borx. helon. merc. til.

GENERALS - DISCHARGES - fibrinous iod. kali-chl. Kali-m. merc-d.

GENERALS - DISCHARGES - hardened agar. bry. con. KALI-BI. kali-m. Mosch. nat-c. nit-ac. Phos. Sep. Sil. Sulph. Thuj.

GENERALS - DISCHARGES - lumpy aeth. aloe Ant-c. calc-s. Cham. Chin. coc-c. croc. Graph. KALI-BI. kali-m. kreos. LYC. mang. Merc-i-f. Merc. PLAT. rhus-t. sep. sil. stann.

GENERALS - DISCHARGES - sticky ant-t. arg-n. ars-i. borx. bry. caust. coc-c. croc. graph. hydr. KALI-BI. kali-c. kali-m. Lach. lappa lyc. Merc. mez. myric. nat-m. osm. Phos. phyt. plat. Puls. rumx. STANN. sul-ac. thuj. ust. verat. viol-t.

GENERALS - DISCHARGES - thick arg-met. ars-i. Ars. borx. calc-s. Calc. canth. carb-v. con. croc. dulc. graph. Hydr. Kali-bi. kali-i. kali-m. merc-cy. merc. nat-m. psor. PULS. sil. sulph.

GENERALS - RICKETS am-c. ars-i. Ars. ASAFA. Bell. calc-act. calc-hp. Calc-p. calc-sil. CALC. con. Ferr-i. ferr-m. ferr-p. Ferr. fl-ac. Guaj. hecla hed. Hep. iod. Ip. Kali-i. lac-c. Lyc. mag-c. mag-m. med. MERC. mez. Nit-ac. nux-m. Ol-j. op. petr. Ph-ac. PHOS. pin-s. Psor. Puls. rhod. Rhus-t. ruta sacch. sanic. Sep. SIL. Staph. Sulph. suprar. tarent. ther. thuj. thyr. tub.

GENERALS - WEAKNESS - nutrition; from defective alet. Helon.

Bibliography



Chapter 8. Chronic Bronchiectasis & Cystic Fibrosis CURRENT Diagnosis & Treatment in Pulmonary Medicine



Chapter 240. Cystic Fibrosis Principles and Practice of Hospital Medicine



Chapter 29. Small Intestine > Cystic Fibrosis CURRENT Diagnosis & Treatment: Surgery, 13e



Chapter 47. Psychological Reactions to Acute & Chronic Systemic Illness in Pediatric Patients > Cystic Fibrosis CURRENT Diagnosis & Treatment: Psychiatry, 2e



Genetics & Dysmorphology > 1. Cystic Fibrosis CURRENT Diagnosis & Treatment: Pediatrics, 22e



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Chapter 40. Membranes: Structure & Function > Cystic Fibrosis Is Due to Mutations in the Gene Encoding CFTR, a Chloride Transporter Harper's Illustrated Biochemistry, 29e



Membranes: Structure & Function > Cystic Fibrosis Is due to Mutations in the Gene Encoding CFTR, a Chloride Transporter Harper's Illustrated Biochemistry, 30e



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Encyclopedia Homoeopathica



Radar 10



Pseudomonas and Other Opportunistic Gram-negative Bacilli > Pseudomonas aeruginosa and cystic fibrosis Sherris Medical Microbiology, Sixth Edition



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Chapter 84. Disorders of the Eccrine Sweat Glands and Sweating > Cystic Fibrosis Fitzpatrick's Dermatology in General Medicine, 8e



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