E. Coli Essay, Research Paper

Do natural medicines work as well as over the counter medicines? This question has been argued about for quite a while. In my experiment, I will compare natural medicine?s effectiveness on Escherichia coli to over the counter drugs, to finally decide if herbal remedies are better than E. coliEscherichia coli (E. coli) is a common bacteria in your stomach and intestines. E. coli is a gram negative rod bacteria(Fundamentals of Microbiology). E. coli bacteria make up 0.1% of the total bacteria in an adults stomach. E. coli has recently been in the news due to several cases of food poisoning by E. coli 0157:h7. This is a specific strain of E. coli and this particular strain causes a life threatening illness. Infections by this strain are rare. (http://falcon.cc.ukans.edu/~jbrown/ecoli.html) E. coli was discovered in 1888 by Theodor Escherich.(fundamentals of microbiology 3rd edition) He first called it bacterium coli. It was later changed to Escherichia coli to honor its discoverer. (http://ag.arizona.edu/classes/plp428/lecture/lect2/lect2\_17jan.html) E. coli is normally found in animal and human intestine(Fundamentals of Microbiology 3rd Edition). This is the ideal habitat for E. coli, because it is damp, dark, and has a good food supply. Since E. coli grows very fast, the abundance of food is necessary for the bacteria?s survival. (http://falcon.cc.ukans.edu/~jbrown/ecoli.html)Some strains of E. coli can make a person very sick. One strain is E. coli 0157:H7, which is a member of the enterohemorrhagic E. coli. This bacteria?s genetic code contains information for the production of a Shiga-like toxin, or Vero toxin. This toxin mixes in the stomach and intestines, and causes damage to the cells in your intestine. This damage is so severe that the body loose water and salts, blood vessels are damaged, and bleeding occurs. This may be lethal to humans and especially small children and elderly people, for they cannot tolerate that much blood loss. (http://falcon.cc.ukans.edu/~jbrown/ecoli.html) The symptoms of an E. coli 0157 inefection are what you might expect from a stomach bug. The symptom?s are: vomiting, fever, and diarrhea. The bacteria does so much damage to your intestines that they bleed, so the diarrhea may be bloody . If someone has any bloody diarrhea then the person should be taken to the doctor immediately. It is important that a doctor sees them. (http://falcon.cc.ukans.edu/~jbrown/ecoli.html) There are many ways to kill E. coli. In meat one way is by nuclear radiation. If E. coli is exposed to radiation from cobalt 60 or other nuclear materials, the E. coli will die (Golden, Frederic). Heat will also kill E. coli. If it is cooked to 160 degrees the E. coli dies. Pasteurizing products also kills the E. coli. coli.(http://falcon.cc.ukans.edu/~jbrown/ecoli.html) E. coli is used in many experiments because of the fact that it is so abundant and readily available. It is also the cause of a lot of infections in humans.Natural Medicines Natural medicines are a part of our world. They?re natural remedies to many everyday illnesses. Natural medicines have been used through out the history of the world. There are records of the Egyptians using them in 1,600 BC. There are scriptures that date back to the Yin dynasty in 1,500 BC. The Old Testament also has many references to herbal medicines. The ancient Chinese were experts at natural medicine. They were experts on using plants, animals and minerals to heal themselves. The Chinese?s natural medication didn?t start diffusing over to Europe until the 2nd century, but there were many similarities in the Chinese?s and the Egyptian?s natural medicines. (Polunin, Miriam) Most countries medicines have changed over the years, but China and India still utilize many naturally based medicines. These medicines are called Ayurvedic and is compose mainly of plant remedies, because many Indians are vegetarians and will not use animal products. Most of these remedies were the same as China?s for they are next to each other. (Polunin, Miriam) There are many different natural medicines. The medicines that will be used in this experiment are: garlic, ginger, cinnamon, juniper, chamomile, and peppermint. I chose these specific herbs because they, with the exception of chamomile, all specifically remedy an illness in the digestive tract, which is where E. coli lives. The reason I chose chamomile is because it is antibacterial. Another reason I choose these herbs is because they are all easy to get and I will have no trouble getting a supply of all of these for my experiment. Garlic is very good for you. It has been used for medical purposes for so long that it cannot be traced. It is native to Siberia and much of Southern Europe. The clove is the part that is used for medical purposes. Garlic has many medical uses. It is used for colds, coughs, bronchitis, and other bacterial sicknesses. Garlic also helps to control blood pressure and cholesterol. The Chinese used it for tuberculoses, coughs and digestion problems. Garlic is taken in the form of tablets, capsules, syrup, and fresh cloves. (Polunin, Miriam) Ginger is an oriental spice. It was used mainly by the Chinese. The Greeks also used it, and the Romans had ginger in their medical kits when they invaded England. The best quality ginger now comes from Jamaica. Ginger is used as a circulatory stimulant. It relieves gas, and colic, it induces sweating, lowers blood cholesterol, and relieves motion sickness. It is used in the form of a fresh root, powder or tablets. (Polunin, Miriam) Cinnamon is one of the spices revered in the bible. This spice comes from the bark of a cinnamon tree. The cinnamon tree grow to be about 30 feet high with blossoms and leathery leaves. Cinnamon reduces muscle tension and spasms, it relieves gas and colic, stimulates the appetite and acts as an astringent. (Polunin, Miriam) Juniper is used as a flavoring in gin. The berry, which takes two years for it to ripen, is used for medicinal purposes. This plant is native to southern Europe. Juniper is used to treat urinary antiseptic. It also relieves gas and colic. Juniper is usually taken as a dried berry, or a tincture, which is an alcohol solution of the medicine. (Polunin, Miriam) Peppermint is one of the most used herbs in North and South America. Peppermint is used to reduce muscle tension and spasms. It?s given to calm digestive problems. It suppresses nausea and vomiting. It also induces sweating. Peppermint is taken in an oil or tincture. (Polunin, Miriam) Chamomile is called the plant?s physician because when it is planted near other plants they get better. It is grown in Europe and America. Chamomile reduces muscle tension and spasms. It is considered to be antibacterial. It is given for gastritis (a stomach inflammation) and for irritated intestines. It promotes wound healing, and is a digestive stimulant. (Polunin, Miriam)Over The Counter Medicines An ?over the counter medicine? is a medicine that you can buy without a doctors prescription. Some of the more common ones would be Advil, or Tylenol. The ones that will be used in this experiment are Tylenol, Sudafed, Advil, Tavist-1, Theraflu, and Triaminic. The form of Tylenol that will be used is Tylenol Flu. Tylenol Flu comes in the form of a gelcap. Tylenol Flu contains an antipyretic, Acetaminophen (500 mg), a cough suppressant, Dextromethorphan HBr (15mg), and a nasal decongestant, Pseudoephedrine HC1 (30mg). These medications should be taken every 6 hours and adults and children over 12 should take 2 gelcaps at a time. (www.tylenol.com) The form of Sudafed that will be used is Sudafed Cold and Cough. This medicine relieve pains, sore throats, coughs and fevers. It contains Acetaminophen, Dextromethorphan hydrobromide, Guaufensin, Pseudophedrine hydrochloride. The usual dose is 2 pills every 4 hours. (The PDR Family Guide to Over-the-Counter Drugs) Advil will also be used. Advil contains Ibuprofen, which is commonly taken for headaches, aches and pains. This medicine is taken in the form of a tablet, capsule, and gelcap form. The usual dosage for adults is 1 pill every 4 to 6 hours. For children, take one every 6 to 8 hours. (The PDR Family Guide to Over-the-Counter Drugs) Tavist-1 will temporarily relieve a runny nose, sneezing, or an itchy throat. Tavist-1 contains Clemastine fumarate. The recommended dosage is 1 tablet every 12 hours. (The PDR Family Guide to Over-the-Counter Drugs) The form of Theraflu that will be used is Theraflu Flu and Cold medicine. This medicine comes in a packet as a powder. The powder is poured into hot water and dissolved, like a tea, and drunk. This drug is used for relieving head and body aches, fevers, and other symptoms that follow a cold or flu. The ingredients are Acetaminophen, Chlorpheniramine maleate, and Pseudophedrine hydrochloride. Take the regular strength every 4 to 6 hours, and take maximum strength, every 6 hours. Theraflu should not be taken more than 4 times a day. (The PDR Family Guide to Over-the-Counter Drugs) Triaminic is used for unclogging stuffy noses, and temporarily reliving runny noses, and scratchy throats. The usual adult dosage is 4-teaspoonfuls, every 4 to 6 hours. The active ingredients are Chlorpheniramine maleate and Phenylpropanolamine hydrochloride. (The PDR Family Guide to Over-the-Counter Drugs)The ExperimentProblem-How will over the counter drugs and natural remedies compare in killing Escherichia coli (E. coli)Hypothesis- I think that more of the natural medicines will kill the E. coli than the over the counter medicines will. The herbal remedies all help with stomach problems, or are antibacterial, where most of the over the counter medications are used for respiratory infections, and only relieve the symptoms, not remedy them.Materials1. Several petri dishes2. Natural medicines; peppermint, juniper, garlic, ginger, cinnamon, and chamomile 3. Over the counter medicines; Tylenol, Sudafed, Advil, Tavist-1, Theraflu, and Triaminic4. E. coli bacteria5. Agar mix6. Ruler7. Incubator8. Graduated Cylinder. 9. Filter paper Procedure1. Prepare several petri dishes with agar.2. Saturate the filter paper disks with a solution that contains the over the counter medications and the natural remedies3. Inoculate agar plates with several strains of E. coli collected from the lab at Woburn Pediatrics.4. Drop prepared disks on agar.5. Incubate over night at 35 C.6. Observe for zones of inhibition to determine effectiveness of medications7. Dispose of all test materials properly8. Repeat process as many times as necessary. All of this research will be brought together to better help answer the question, do herbal medicines really work? This has been debated about for years, and this experiment will help to decide if they work or not. I think that the Herbal medicines will work better, because they directly treat the illness. The over the counter drugs just treat the symptoms. The chamomile will work the best, because it is antibacterial, and therefore will kill the bacteria better than all of the other remedies.