

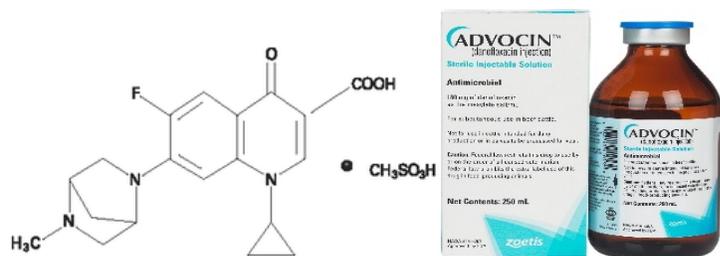
The exportation of A-180 Antibiotic to Nepal

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Part 1-Product Information:

A-180 Antibiotic:

The A-180 antibiotic is used for the treatment of Bovine Respiratory Disease (BRD) in beef cattle. BRD is one of the most common diseases in beef cattle in North America and throughout the world (Snowder, Vleck, Cundiff, Bennet, 2006). The disease is also very costly to the beef industry in many different countries. The disease can be fatal to cattle and some of the health issues/symptoms that are associated with the illness are fever, anorexia, lethargy, pneumonia, and lung lesions (Toaff-Rosenstein, Gershwin, Tucker, 2016). Any combination or a single health issue/symptom may lead to the death of an animal. There are several different strains of the disease, that are caused by different bacterial and viruses such as; *Pasteurella Multocida*, *Mannheimia Hemolytica*, *Mycoplasma Bovis*, *Bovine Herpes Virus 1*, ... (Snowder, et al. 2006). The A-180 antibiotic can not treat all the different strains of the BRD and can only be used for the treatment of BRD that is associated with *Mannheimia haemolytica* and *Pasteurella multocida* (Zoetis, 2016). Also, the antibiotic can not be used on dairy cows, calves that are intended for veal, and animals that are being slaughtered for meat for human consumption within 7 days of being treated with the A-180 antibiotic (Zoetis, 2016). Finally, the A-180 antibiotic is an injectable solution that contains danofloxacin mesylate which is a synthetic fluoroquinolone antimicrobial agent (Zoetis, 2016). The antibiotic comes in both 100ml and 250ml bottles and costs approximately \$437 Canadian dollars for a 250ml bottle (Advocin (danofloxacin injection) Antimicrobial for Beef Cattle - 250 ml, 2016).



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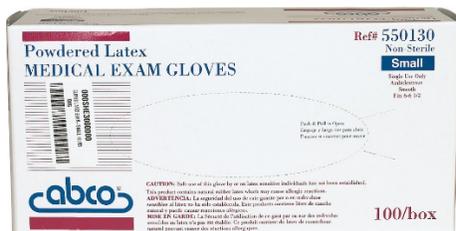
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Materials required and the cost:

The use of A-180 antibiotic requires minimal materials and equipment to inject the drug in to an animal. The most necessary material required is a clean syringe. The antibiotic can only be administered or injected into an animal with no more that 15ml of medicine per injection site (Zoetis, 2016). This means that syringes that inject more than 15ml of medicine are not necessary but can still be used if they can accurately measure the amount of drug being administered.

The type of syringe used to administer the drug may be a disposable syringe that may only be used once or a reusable syringe. The cost of one disposable 20cc (20 ml) syringe costs approximately \$1.50 or a package of 4 20 cc (cubic centimetre) syringes costs approximately \$4.00 Canadian dollars (Search Results for syringe at Tractor Supply Co, 2016). Disposable syringes with smaller cc's can also be purchased, for example a package of 6 6cc syringes can be purchased for approximately \$2.80 Canadian dollars (Search Results for syringe at Tractor Supply Co, 2016). The cost of a reusable syringe can range from \$25.00 to \$50.00 Canadian dollars, the reusable syringe would be a one-time cost and would only need to be purchased once, where as the disposable syringes would need to be purchased every time an animal is injected (Search Results for syringe at Tractor Supply Co, 2016). The cost of these syringes would also be higher when purchased from a veterinarian supplier in Nepal.

Another material that should be used when administering/injecting animals with A-180 antibiotic is rubber or latex gloves. Rubber or latex gloves should be used so that there is no exchange of bodily fluids between the animal and the veterinarian administering the drug. A box of 100 latex gloves can be purchased for \$8.49 Canadian dollars from Valley Vet (Exam Gloves, 2015). The cost of latex gloves may be more expensive when purchased in Nepal or from a Nepalese veterinarian supplier.



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Dosage of Drug:

The medication can be given to cattle in a single day dose or as multiple day therapy and is not meant to be used as the first treatment option in treating BRD and should only be used after other attempts at treating the disease have failed (Zoetis, 2016). The drug should not be used indiscriminately because it contains antibiotics and precautions should be taken to limit any potential risk of animals or bacterial developing antimicrobial resistance (Zoetis, 2016). The drug is used at a dosage rate of 6 milligrams of A-180 antibiotic per 1 kilogram of body weight in cattle and a maximum of 15 milligrams per injection site on the animal for multi-day therapy. The dosage rate for single day treatment is 8 milligrams of A-180 antibiotic per 1 kilogram of body weight. Below is a chart that shows the dosage rates of A-180 Danofloxacin Mesylate Injectable Solution for cattle.

Table 1:

Cattle Weight		Dose Volume (mL)	
Lb	kg	6 mg/kg given twice 48 hours apart	8 mg/kg given once
50	22	0.75	1
100	45	1.5	2
200	91	3.0	4
300	136	4.5	6
400	181	6.0	8
500	227	7.5	10
600	272	9.0	12
700	318	10.5	14
800	363	12.0	16*
900	408	13.5	18*
1000	454	15.0	20*

(Zoetis, 2016)

Labour required:

To use the A-180 antibiotic requires a veterinarian to inject the drug into an animal using syringes or needles. There is not a lot of labour required to fill the syringes with the antibiotic and this can be done in less than a minute. The calculations to determine the amount of drug that an animal should be given can also be done easily using table 1, which is available on Zoetis Canada's website and in the packaging or the dosage rates, which are printed on the A-180 antibiotic package and bottle. The veterinarian must also inject the animal with the antibiotic which should only take less than a min if there is one injection site. If there is more than one injection site because the amount of medication needed exceeds the maximum amount of drug allowed per injection site of 15 ml, it may take longer for the veterinarian to properly medicate the animal with the A-180 antibiotic to treat BRD. Finally, there is some labour required to catch and restrain the animal while it is medicated.

Zoetis Canada:

The A-180 antibiotic will be purchased through Zoetis Canada. Zoetis Canada is a manufacturer of a variety of products for use in the livestock industry and agriculture industry such as; vaccines, medicines, genetic tests and they are all supported by different services provided by the company (About Us, 2016). The A-180 antibiotic will be purchased from Zoetis Canada's headquarters which is in Kirkland, Quebec, Canada. Zoetis Canada is owned by the parent company Zoetis which has its global and United States headquarters located in Parsippany, NJ, USA. The company is also associated with Pfizer and has locations in over 120 countries throughout the world and reported a revenue of \$504 million American dollars in 2013 (Financial Highlights, 2015). The sales of Zoetis products in Canada do not amount to a lot of Zoetis's total sales with approximately 4% of the of company's revenue coming from its Canadian locations (Financial Highlights, 2015). Zoetis has more than 300 different products that are produced in the 28 different manufacturing sites ran by Zoetis (Financial Highlights, 2015).

Contact Information for: **Zoetis Canada Inc.**

16740 Trans-Canada Highway
Kirkland, Quebec, H9H 4M7

Tel: 514-459-3000 or 844-496-3847

The Zoetis logo is displayed in a bold, orange, lowercase sans-serif font.

<https://www.zoetis.ca/>

Benefits to Canada:

The exportation of A-180 antibiotic from Zoetis Canada has few benefits to Canada. The exportation of this product could help to improve the Canadian economy by improving and increasing revenue for Zoetis Canada, increasing revenue for the company that transports the product with Canada and to Nepal, and to increase the amount of research done by Zoetis to develop more products and medications. Firstly, the revenue for Zoetis Canada may increase from the exportation of the A-180 antibiotic to Nepal because the company will make money from every sale of the medication. The increase in revenue that Zoetis Canada makes from the increased sales is not guaranteed to remain in Canada. Zoetis Canada is owned by Zoetis which is an American company and has control over Zoetis Canada's financials, therefore the profit from the exportation of the A-180 antibiotic may go to the Zoetis's head office in the United States or the Zoetis Canada's head office in Quebec, Canada (About Us, 2016). Secondly, there will be increased revenue for the company that ships the antibiotic to Nepal. The antibiotic may be shipped through Canada Post which is owned by the Canadian government or it may be shipped using Purolator which is owned by Canada Post (Gaudet, 2010). The increase in revenue will stay in Canada and will help to increase the country's economical development because all revenue will go to the Canadian government. Thirdly, the increase in sales of the A-180 antibiotic will give Zoetis more revenue and profit to spend on developing new medication and research (About Us, 2016). The new medication and research could help improve Canadian farms because there may be more information about certain diseases and more treatment options. In conclusion, the exportation of A-180 antibiotic may benefit Canada by increasing the revenue for Zoetis Canada, increasing revenue for Canada Post or Purolator which will increase revenue for the Canadian Government, and by increasing the amount of money available for research by Zoetis Canada.

Part II – Export potential to Nepal:

Nepal is a land locked country located between China and India. The country has an area of approximately 147 000 kilometres squared and a population of approximately 28 million people (Chapagain, 2016). The land is divided into 3 different land types; mountain region, hill or mid-hills region, and terai. The land is mostly used for the agricultural industry with 28% being used for agriculture and 12% being used as grassland and pasture. Agriculture plays a key role in Nepal's economy and economical growth. The agriculture sector employs more than 70% of the countries population and makes up 38% of the countries gross domestic products (Chapagain, 2016). There is also a variety of farming systems in Nepal that range from nomadic, traditional, subsistence, and semi-mechanized. The main livestock species in the country are fowl/chickens, goats, cattle, and buffaloes. There are approximately 7.25 million cows in Nepal and 287 000 metric tonnes of meat produced annually (Chapagain, 2016). Finally, the currency used in the country is Nepalese rupees and 1 Nepalese rupee is equal to \$0.013 Canadian dollars.

Transportation:

The transportation of the A-180 antibiotic from Zoetis Canada's head office in Kirkland, Quebec, Canada or one of Zoetis's warehouses in Canada to a veterinarian supply distributor in Nepal could be done by either Canada Post or by Purolator. Both companies are based in Canada and can ship packages, letters, and parcels internationally (Canada Post: Mailing, shipping, shopping, 2016). The A-180 antibiotic would be packaged by Zoetis Canada and picked up at a warehouse or manufacturer and transported to Nepal. Once the product arrived in Nepal it would be transported to a distributor of veterinarian supplies in the country. The medication would then get transported to veterinarian offices and clinics where it would be sold to farmers. After the

farmer or a veterinarian has purchased the A-180 antibiotic it would most likely get transported to a farm where beef cattle are located.

Storage:

The A-180 antibiotic should be stored at or below a temperature of 30⁰C. The should not be kept in direct sunlight and should be kept from freezing (Zoetis, 2016). This means that the medication will not need to be refrigerated and precautions must be taken if the product is used in the mountain region in Nepal to ensure that the medication does not freeze (Zoetis, 2016).

Cost analysis:

Table 2:

	Cost in CAD	Cost in NPR	Cost to treat 1000lb animal (CAD)	Cost to treat 1000lb animal (NPR)
A-180 antibiotic from Zoetis	\$437.00	\$35732.84	\$26.22	\$2143.97
Transportation from Canada to Nepal	\$4.00	\$327.07	\$1.00	\$81.77
Needles/Syringes	\$60.00	\$4906.11	\$3.60	\$294.37
Latex Gloves	\$8.50	\$695.03	\$0.17	\$13.9
Total:	\$509.5	\$41661.06	\$30.99	\$2534.01

Needs and benefits to Nepal:

The exportation of A-180 antibiotic from Canada to Nepal may benefit Nepal because it could decrease the mortality rate in cattle, increase the amount of work for veterinarians, and increase economic development in the country. The antibiotic is intended for the treatment of Bovine Respiratory Disease (BRD) which can be fatal to cattle and cause health issues that could impact the amount of profit a farmer can make on a certain animal. The mortality rate in beef cattle and non-milking dairy cattle and non-veal calves could be decreased because of the use of

the A-180 antibiotic (Zoetis, 2016). With the decreased mortality rate in beef cattle the farmer could make more money which could be invested back into his farm business. The increased profit that the farmer would make could help to increase economical development in the country because the farmer may spend money on improving their farms infrastructure. If the farmer built a new barn with their increased profit it would help to create more construction jobs in the country and more retail jobs because the farmer would need to buy building supplies at a store and hire labours to help construct the building. Finally, more jobs would be created for veterinarians because the A-180 antibiotic is supposed to administered by a veterinarian (Zoetis, 2016). This means that the farmer would have to hire the veterinarian to treat their cattle with the A-180 antibiotic. The increase in veterinarian jobs would also help to increase economical growth and development because the veterinarian will need to buy vehicles to commute to different farms. Therefore, the exportation of A-180 antibiotic from Canada to Nepal would benefit Nepal by decreasing the mortality rate of cattle, increasing the amount of jobs for veterinarians, and increasing economic growth and development in Nepal.

Companies:

Once the A-180 antibiotic is transported to Nepal it could then be delivered to a variety of different Veterinarian supply companies. There are many different companies that could sell and distribute the antibiotic such as; Best Vet Center, Gurans International P Ltd, Lumbibi Vet, and Nipradi Vet Pharma (Veterinary Medicine Suppliers (Companies) in Nepal, (n.d)). All of these companies import veterinary medicines and are located within and throughout Nepal.

Table 3:

Company Name	Address	Type	Products/services
Best Vet Center	Kalanki Kathmandu, 977 Nepal	Distributor, Importer	Veterinary Care Products, Veterinary Equipment, Veterinary Medicines, Veterinary Vaccines
Gurans International P	Baudhabari Business Complex, Teku Kathmandu, 14598 Nepal	Distributor, Importer, Manufacturer	Veterinary Herbal Medicines, Veterinary Medicines, Veterinary Products, Veterinary Vaccines
Lumbini Vet	New Baneshwor, Lakhechaur Marg Kathmandu, 44600 Nepal	Importer	Veterinary Medicines, Veterinary Products, Veterinary Vaccines
Nipradi Vet Pharma	Chitwan, +977 Nepal	Agent, Distributor, Importer, Shop, Trader, Wholesaler	Veterinary Apparel, Veterinary Care Products, Veterinary Diagnostic Tests, Veterinary Disposables, Veterinary Equipment, Veterinary Medicines, ...

(Veterinary Medicine Suppliers (Companies) in Nepal, (n.d))

Documentation:

There is no extensive paper work required to export to A-180 antibiotic to Nepal. The antibiotic is not on the “Export Control List” and therefore does not need an export permit (Global Affairs Canada, 2015). Also, there should not be any extensive paperwork required to import the medication into Nepal because it is not a controlled substance and will be used to improve the countries agriculture industry.

Competition:

There are several competitors that produce a product similar to the A-180 antibiotic from Zoetis Canada. Chinese manufacturers and distributors are marketing the powder form of danofloxacin mesylate for between \$10-100 and \$10-30 American per kilogram (Danofloxacin Mesylate-Danofloxacin Mesylate Manufacturers, Suppliers and Exporters on Alibaba.com, 2016). Danofloxacin mesylate is the main active ingredient in A-180 antibiotic. This means that

the powder form of danofloxacin mesylate is not the exact same as the A-180 antibiotic from Zoetis but could be used to manufacture the antibiotic in China or after it is shipped to Nepal.

Summary/Conclusion:

In conclusion, even though the exportation of the A-180 antibiotic would benefit both Nepal and Canada, I would not recommend exporting this product to Nepal. The antibiotic will be too expensive for the farmer to afford and treat their cattle with. It would make more financial sense if farmers and veterinarians used antibiotics that are manufactured in China or Nepal. Therefore, the A-180 antibiotic should not be exported from Canada to Nepal.

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