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A GLOBAL ANALYSIS OF TRADE POLICIES IN ANTIMICROBIAL MEDICINES

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Abstract
Antimicrobial medicines are difficult to access for the poor people in many parts of the world, mainly because of their costs and lack of local availability. While it is not necessary that these medicines may be produced across the world, it is possible to import them from countries that have enormous production capacities. For this to happen, the countries that lack these medicines should have trade policies in place that facilitate their cheap imports. However, trade policies typically do not take this aspect into account when they are formulated. The policy determinants of high import tariffs are industrial policy and protectionism-related concerns on one hand and revenue considerations on the other hand. In this paper, we take a close look at the global trade and tariffs in various countries in several antimicrobial medicines and medicaments, to come up with inferences on how countries that import a lot of them may do better by reducing tariffs. Especially, the article deals with anibiotics trade. The export and import drug potentials are investigated. The largest export countries proved to be China, the United Kingdom, India, Canada, Germany, Switzerland and Italy. The import leaders are India, Chile, Austria, the USA, Switzerland. A major policy implication emerging from this study is that countries ought to take a deeper look at the trends in trade and tariffs on antimicrobial drugs on a priority basis, since this has to do with lives of real people. Unnecessary blanket tariffs meant for tariff revenue should be avoided, as we find this in many countries that have hardly any production capacity for these drugs (such as the Bahamas, Djibouti, Bermuda, the Comoros, etc.). The bigger players in the sector, both in terms of imports and exports, have relatively lower tariffs, but there is still a lot of scope of reducing these tariffs to ensure that these drugs are available at affordable prices to people at large. Industrial policy motivations to levy tariffs in order to protect the domestic industry against import competition may also need to be done in a measured manner, because this is about health and safety of people and not just another industry. Having said that, for health security purposes, it makes sense to develop domestic production capacity and supply chains. That can be done based on international partnerships, R&D, domestic tax and other policy incentives like the Production Linked Incentives (PLI) scheme in India (rather than tariffs).

Keywords: global trade; antimicrobials; medicines; tariffs; custom duties; revenue.

JEL Classification: H21, I10, I18, I19

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Introduction

Antimicrobial medicines play a pivotal role in treatment of infectious diseases. They are life-saving drugs whose availability significantly impacts public health. Access to antimicrobials, however, continues to be a complex issue in many countries. More deaths are caused by the limited access and delays in access to antibiotics than by antibiotic resistance (Requejo et al., 2013).

Access to antimicrobial medicines is determined by a number of factors: public health policies, industrial policies, pharmaceutical sector development, R&D, etc. Trade policy has not been given enough emphasis in this regard, though there is a potential for this to be a low hanging fruit in terms of being able to address the access issue effectively.

In particular, import tariffs on these drugs are imposed by many countries with at least two objectives. Firstly, they are meant to protect the domestic industry that produces AMs, which is assumed to exist, thrive or flourish in the future. Secondly, they are not mindful of anything specific to this industry, but rather an instrument to generate revenue for the government. They are kept in place as there is no one to lobby against the tariff.

While the first objective may be deemed reasonable for the countries that have some capacity or potential to produce AMs, even in that case AMs end up becoming more expensive than they should be by the time they reach the consumers. The final price of a pharmaceutical is determined by many factors that differ by country. Costs and markups occur along the distribution chain from port charges to warehousing, local government taxes, distribution charges and hospital or retailer markups. Tariffs may seem a relatively small component of the final price, but the effect is compounded as all of these "internal" costs accumulate. Imported pharmaceuticals are hence at a clear disadvantage and patients bear the burden in cost and diminished availability.

In the second case, tariffs merely act as a cost escalator of AMs without creating any capacity. A public health stance needs to be taken, by advocating for tariff reduction.

In this study, we focus on this aspect, by analysing the current set of tariffs globally in the sector, and further modeling the potential impact of reducing those tariffs on the AM prices. Today, no such study exists in the literature, apart from a very brief exploratory document on sustainable development goals (Hanefeld et al., 2017) and a broader study on COVID-19 medical supplies (Vickers & Ali, 2020).

Literature review

While there is literature focusing on trade and tariff policies for medicines and medical equipment, discussions on the impact of trade policies (particularly concerning AMs) remain largely amiss.

Access to antimicrobial medicines is a critical determinant of the global health scenario. Tariffs on AMs are an important factor limiting this access. In this section, we aim to divide our discussion into two segments. Firstly, to highlight the pivotal role of antibiotics in preserving public health. Secondly, to reflect how tariffs can be a distortionary practice in the pharmaceutical sector particularly.

Stevens & Banik (2020) analysed the trends in pharmaceutical tariffs for specified HS codes. They underlined that pharmaceutical tariffs are essentially twice as regressive as normal tariffs since the hardest hit is poorer people suffering from disease.

In the case of medicines, import tariffs are the prime trade barrier responsible for inflating end prices because such border surcharges are compounded as the product moves down the distribution chain. Bauer & Lamprecht (2021) studied the economic effects of tariffs on supply in different nations. They concluded a full global elimination of import tariffs on APIs would encourage producers in low- and middle-income countries to expand and diversify medicinal product portfolios, thereby benefiting patients by providing wider access to diversified medicinal ranges.

On similar lines, Helble et al. (2017) examined the ways in which openness to trade can help improve development outcomes in the case of health specifically. Their research further strengthened the proposition that tariffs simply transfer income from consumers to local producers and the government, with an additional cost in economic efficiency. They averaged the applied MFN rates for a vast range of health product groups for 160 countries. It was concluded South Asia was the most protected region but could not justify the rates on the basis of the development and protection argument. They stated that no public policy objective (such as consumer protection) was achieved by tariffs.

A general view on COVID-19 medical supplies was provided by Vickers & Ali (2020). It was stated that lower import barriers can boost public health responses in LDCs by reducing costs for hospitals and healthcare professionals and enabling access to a range of foreign suppliers.

The World Medicines Situation Report (World Health Organization, 2004) noted that high prices of medicines in resource-poor settings can significantly restrict access to medicines. That constitutes 20-60% of health expenditure in poorer countries against 10%-20% in the richest countries.

A study by Bauer (2017) examined the impact of tariffs on final prices for consumers. Here, it was estimated that the compounded financial burden of import tariffs on pharmaceuticals is as high as 6.2bn USD for China, 2.8bn USD for Russia, 2.6bn USD for Brazil and 737m USD for India. He further found out that for Brazil and India, tariffs on medicines inflate their final price by up to 80 per cent of the original sales price ex-factory.

Another instance of tariff removal impact on final prices is reflected by China's judgment to eliminate tariffs on 28 categories of imported drugs in May 2018 (Zhang, 2018). The judgment discussed the implications for foreign and domestic pharma companies. It mentioned that due to high tariffs, multiple layers of distribution, and monopoly supply, imported drugs had been extremely expensive in China. It further pointed out that reducing the price of imported drugs would eliminate the economic burden on its vast patient population. Removing the tariff would lead to the reduction of imported drug prices, giving foreign pharmaceutical companies a better chance in the competitive Chinese market (Zhang, 2018).

Access also forms a significant aspect of the UN Sustainable Development Goals (SDGs). Mendelson et al. (2016) suggested that unrestricted access to antimicrobials can potentially lead to substantial population health gains in the short term which might extend beyond reductions in morbidity and mortality for individual infections.

Talking on the health perspective, the WHO paper "Meeting Report: Antibiotic Shortages: Magnitude, Causes and Possible Solutions" (2018) assessed the cost of one antibiotic shortage to be between € 20-30 million. Access to antimicrobials and prevention measures has been a crucial factor in the 50% reduction in maternal and child deaths since 1990 (Requejo et al., 2013). Penicillin lowered mortality associated with pneumococcal pneumonia from 20-40% to 5%, and mortality from pneumococcal bacteraemia from 50-80% to 18–20% (Laxminarayan et al., 2016). The research estimates that mortality for penicillin-sensitive causes of death fell by 0.3 per thousand following the introduction of penicillin, a 58 percent decline relative to the mean prior to 1947 (The National Bureau of Economic Research, 2019).

In the US for example, the leading causes of death changed from communicable diseases to non-communicable diseases (cardiovascular disease, cancer, and stroke). The average life expectancy at birth rose to 78.8 years, post the onset of the antibiotic era (Adedeji, 2016).

A major emerging threat to health is Antimicrobial Resistance, which calls for balancing access to overconsumption. However, any efforts to tackle this phenomenon must acknowledge the fact that many of the world's poorest people still lack access to essentials. Resistance could be conveniently dealt with by restricting access, but it is not a feasible option. The repercussions could be tragic for those without access to affordable drugs (Laxminarayan et al., 2016).

The requirement of tariff free trade in essential drugs is reiterated by the WTO Pharma Agreement (1994). That eliminated tariffs and other duties and charges on specified pharma products. It is applicable only to a group of participants (HS chapter 30, products classified (or classifiable) in HS headings 2936, 2937, 2939, and 2941).

Between 2006 and 2018, pharmaceutical imports by jurisdictions and customs territories outside the WTO Pharma Agreement (1994) have increased from 39.7bn USD in 2006 to 65.73bn USD in 2018. Hence, we see a Compound Annual Growth Rate of 4.28% over those twelve years (Stevens & Banik, 2020).

As a result, the Zero for Zero initiative, while still important, represents a declining share of global pharmaceutical trade. Governments should therefore commit to permanent tariff reductions on medicines and vaccines via legally binding WTO commitments. Most obviously, this means more WTO members should accede to the WTO Pharma Agreement (1994) as swiftly as possible (Stevens & Banik, 2020).

The above arguments support the stance for elimination of tariffs on essential pharmaceutical products. Our study aims to ameliorate this literature by focussing on the potential of maximising access to AMs through elimination of tariffs.

Data sources and methodology

The trade and tariff data have been sourced from the World Integrated Trade Solution (WITS, 2023) database by the World Bank. The trade data pertains to the year 2021.

The latest year for which tariff data is available for most nations is 2018, hence the same has been chosen for the purpose of tariff analysis.

This paper analyses the trade and tariff data across the following categories of HS codes. They comprise digit subcategories of HS-2941 and HS-3003. The former is Antibiotics. The latter is Medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic uses, not in measured doses or put up for retail sale.

The HS 2941 subcategories:

HS-294110 – Antibiotics; penicillins and their derivatives with a penicillanic acid structure; salts thereof.

HS-294120 – Antibiotics; streptomycins and their derivatives; salts thereof.

HS-294130 – Antibiotics; tetracyclines and their derivatives; salts thereof.

HS-294140 – Antibiotics; chloramphenicol and its derivatives; salts thereof.

HS-294150 – Antibiotics; erythromycin and its derivatives; salts thereof.

HS-294190 – Antibiotics; n.e.s. in heading no. 2941.

The HS 3003 subcategories:

HS-300310 – Medicaments containing penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (not in measured doses, not packaged for retail sale).

HS-300320 – Medicaments containing antibiotics other than penicillins, streptomycins and their derivatives, for therapeutic or prophylactic uses (not in measured doses, not packaged for retail sale).

HS-300420 – Medicaments containing antibiotics other than penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (packaged for retail sale).

HS-300410 – Medicaments containing penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (packaged for retail sale).

We analyse the top 25 exporting and importing nations for each of the product subcategories mentioned above on the basis of their trade value in USD millions. Further, we look into the nations imposing the highest import tariffs to obtain a panoramic understanding of the tariff structure for AMs of all major countries of the world.

Results

Below we represent and discuss the results of our research analysis. Trade and tariffs are considered in two separate sections.

TRADE ANALYSIS

1) HS-294110 – Antibiotics; penicillins and their derivatives with a penicillanic acid structure; salts thereof

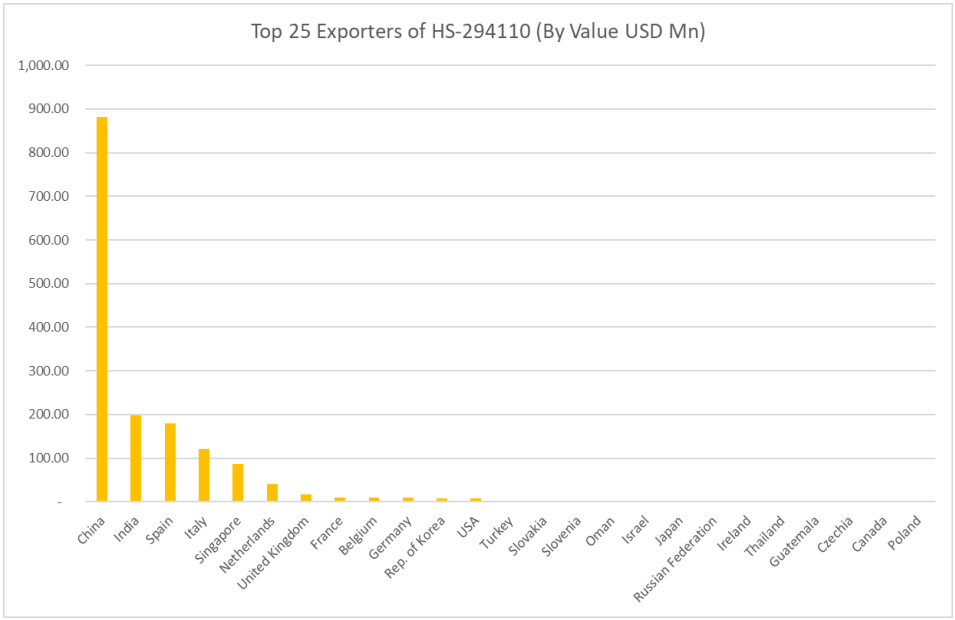

Figure 1: The top 25 exporting nations of HS-294110 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The above graph shows the export data in 2021 for HS-294110 – Antibiotics; penicillins and their derivatives with a penicillanic acid structure; salts thereof. A large part of the export is dominated by China, accounting for nearly 56% of the total exports in the top 25 category. It is followed by India, Spain, Italy, Singapore, the Netherlands and the UK with the remaining 40%.

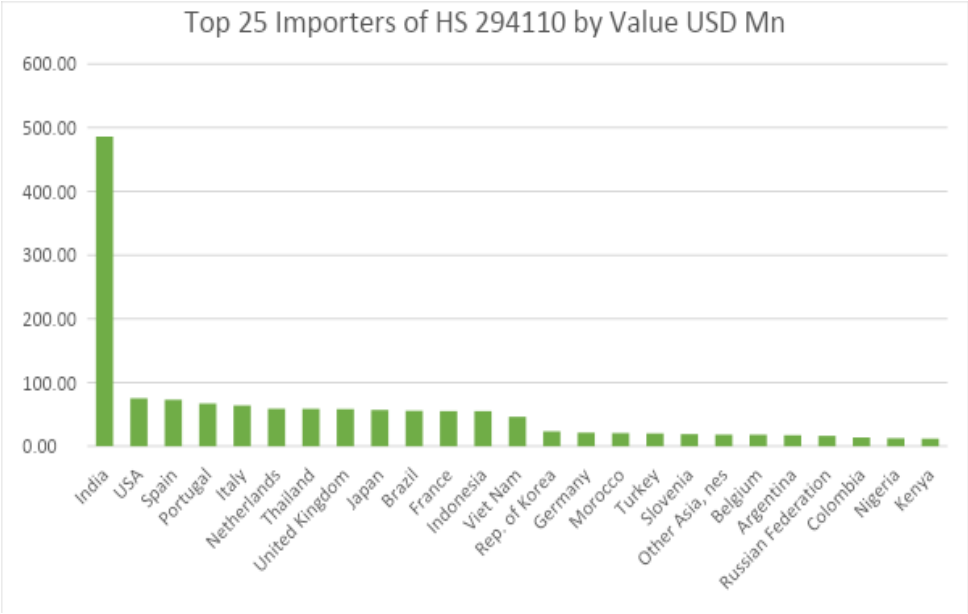

Figure 2: The top 25 importing nations of HS-294110 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The above data reveals that India emerges as the largest product importer, followed by the US, Spain, Portugal, Italy, the Netherlands, Thailand, the UK. The share of imports among the top 25 nations is dominated by India constituting nearly 34%. The latter share of nations collectively contribute to about 32%.

2) HS-294120 – Antibiotics; streptomycins and their derivatives; salts thereof

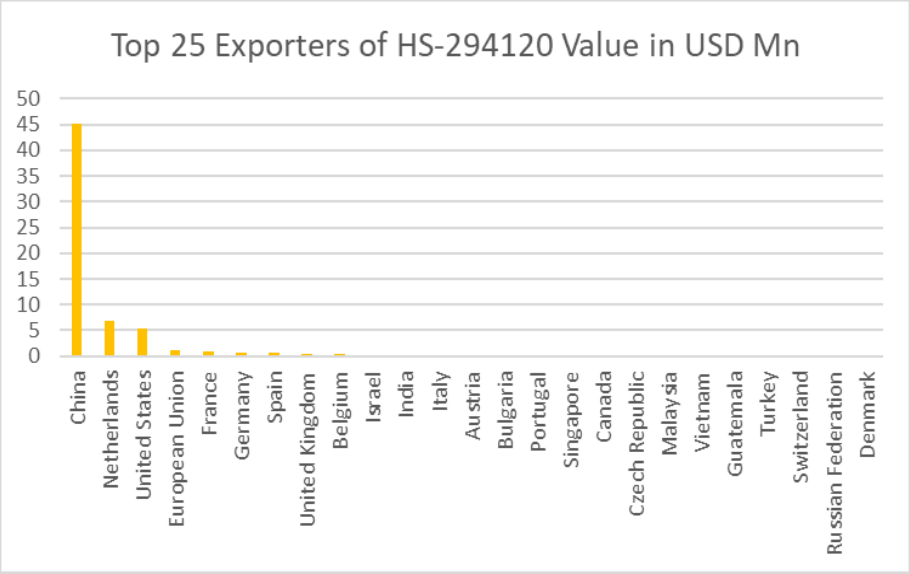

Figure 3:The top 25 exporting nations of HS-294120 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

In 2021, the top exporters of HS-294120 are China ($45.24 mn, 1,928,930 kg), the Netherlands ($6.76 mn, 164,576 kg), the United States ($5.24 mn, 9,453 kg), the European Union ($1.09 mn, 19,273 kg), France ($0.885 mn, 32,156 kg).

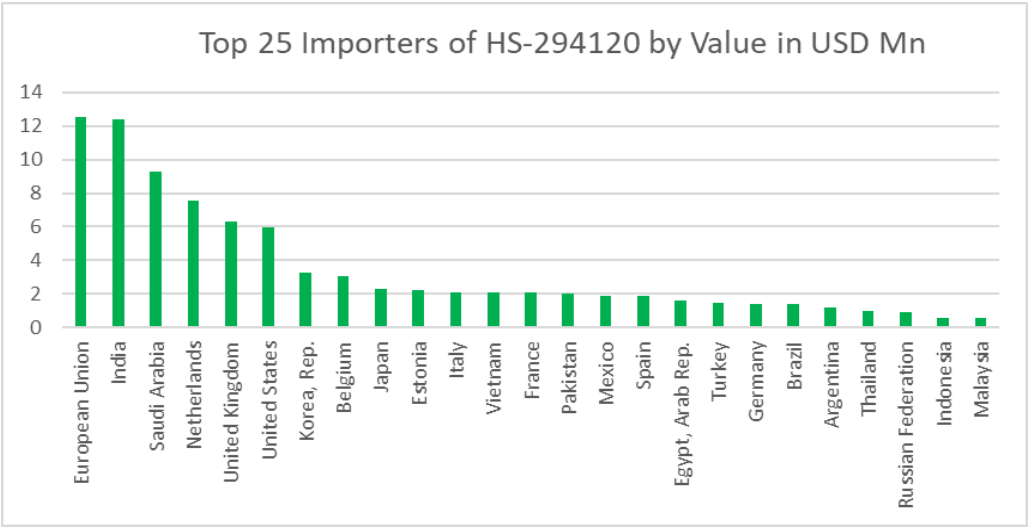

Figure 4:The top 25 importing nations of HS-294120 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Top importers of HS-294120 are the European Union ($12.519 mn, 401,724 kg), India ($12.42 mn, 276,523 kg), Saudi Arabia ($9.29 mn, 27,698 kg), the Netherlands ($7.570 mn, 253,058 kg), the United Kingdom ($6.27 mn, 108,166 kg).

3) HS-294130 – Antibiotics; tetracyclines and their derivatives; salts thereof

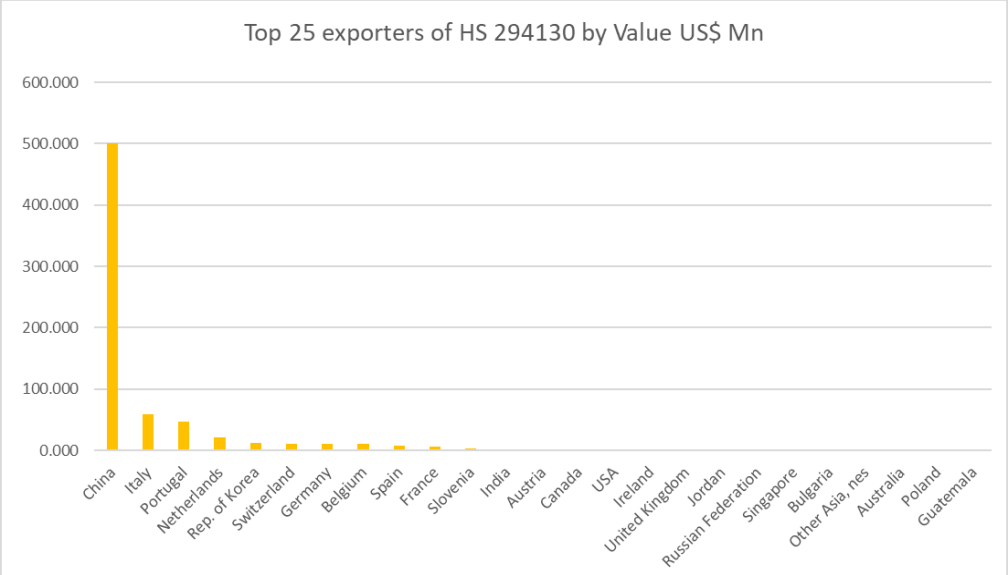

Figure 5:The top 25 exporting nations of HS-294130 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Data presented for HS-294130 underlines China's dominance in the share of exports. For the year 2021, China's exports valued at $500 mn, nearly 13.5 mn kg in terms of volume. Among the top 25 exporting nations, China contributed ~71% of exports in terms of value (it is even the largest after taking the remaining nations together).

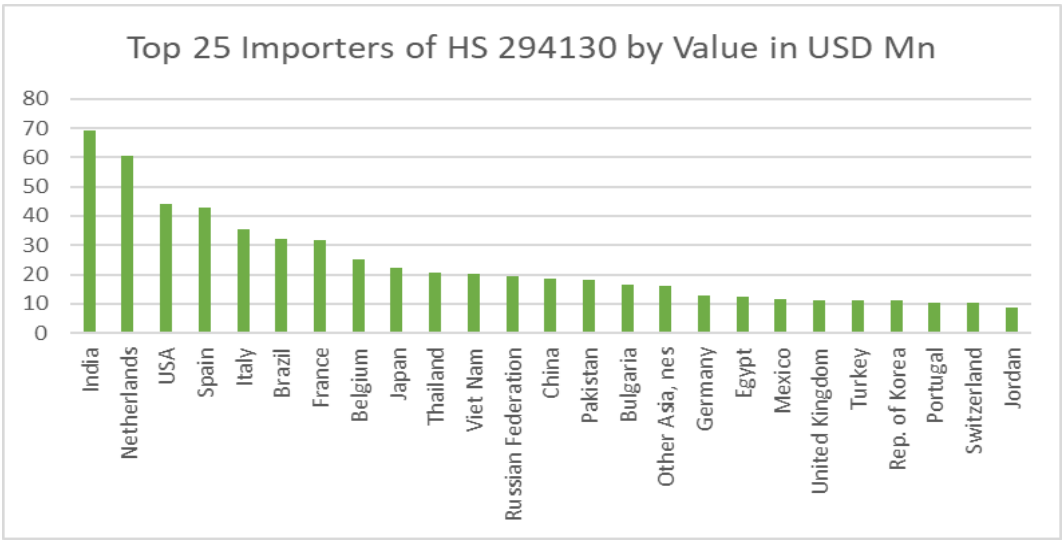

Figure 6:The top 25 importing nations of HS-294130 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The product import statistics reveals a more fragmented trend. Though imports are dominated mainly by India ($69 mn) accounting for nearly 11.67% and the Netherlands ($60.58 mn) forming 10.2% of the import share within the category, the shares of the remaining nations are distributed.

4) HS-294140 – Antibiotics; chloramphenicol and its derivatives; salts thereof

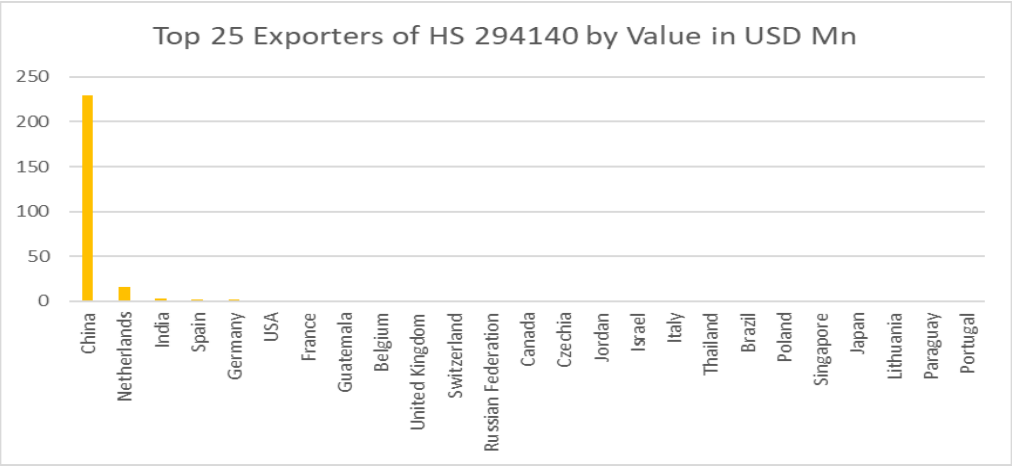

Figure 7:The top 25 exporting nations of HS-294140 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

China singularly dominates the HS-249140 export trade, contributing over 90%. The Netherlands, India, Spain and Germany cumulatively account for 9.1% of the share within the aforementioned nations. The remaining share is evenly distributed among the nations contributing only marginally.

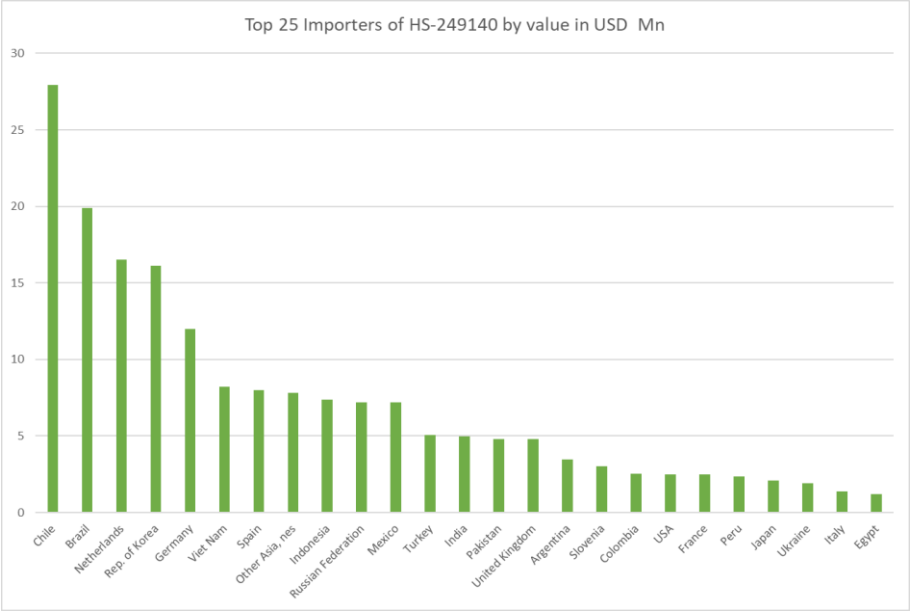

Figure 8:The top 25 importing nations of HS-294140 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Within the imports segment, Chile has the maximum HS-294140 imports ($27.93 mn), followed by Brazil ($19.89 mn), the Netherlands ($16.52 mn), Korea ($16.12 mn), Germany ($11.97 mn). These countries account respectively for 14.45%, 11%, 9.13 %, 8.9% and 6.62% to the total share of imports represented by the top 25 importing nations.

5) HS-294150 – Antibiotics; erythromycin and its derivatives; salts thereof

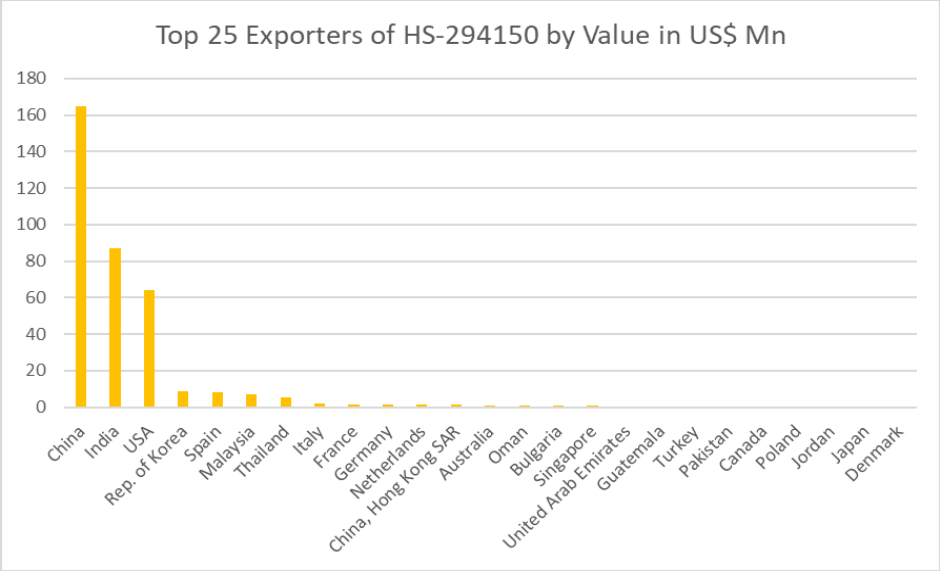

Figure 9:The top 25 exporting nations of HS-294150 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Export data highlights China's dominance in this segment. With the $164.58 mn trade value in 2021 – nearly 45.77% of the export value among the highest exporting nations. India and the USA follow and contribute respectively nearly 25.24% and 17.8% in 2021.

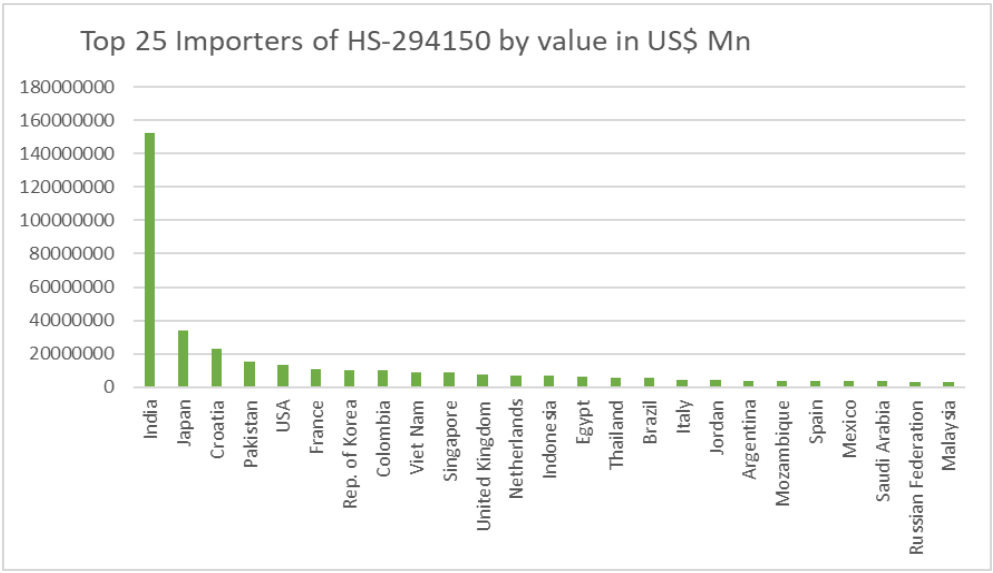

Figure 10:The top 25 importing nations of HS-294150 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

In 2021, the Indian import stood at $152.39 mn, nearly 42.37 %. Japan, Croatia, Pakistan, the USA and France followed and collectively form over a quarter of the imports in terms of value.

6) HS-294190 – Antibiotics; n.e.s. in heading no. 2941

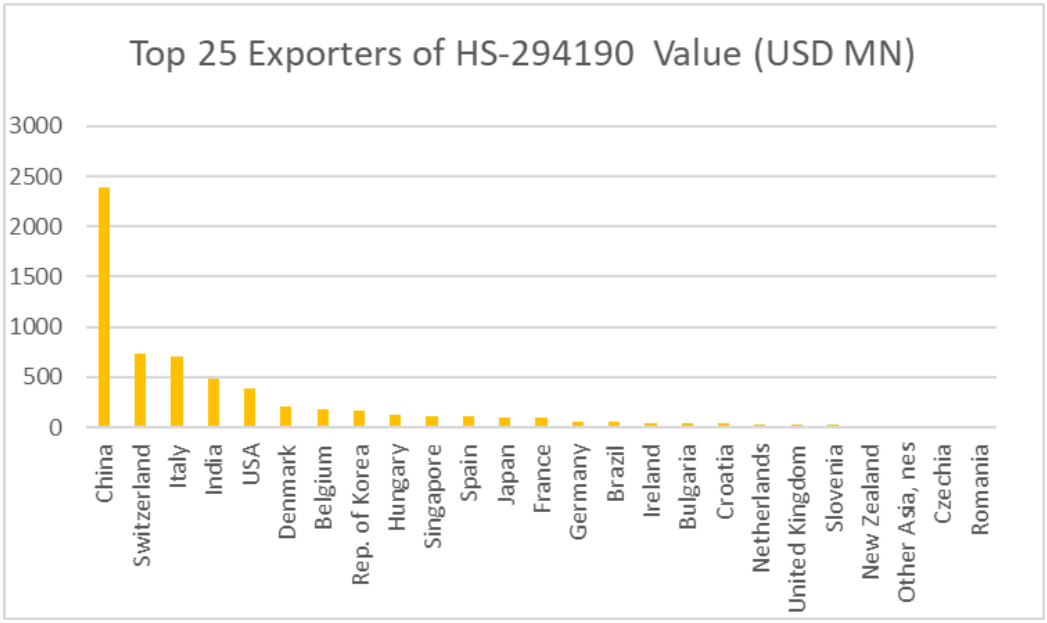

Figure 11:The top 25 exporting nations of HS-294190 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

During 2021, China recorded $2384 mn of the HS-294190 exports. This is the highest export figure for China for all the HS codes covered in the paper. However, in terms of per centage figures, this accounts for nearly 38% of the exports in the category.

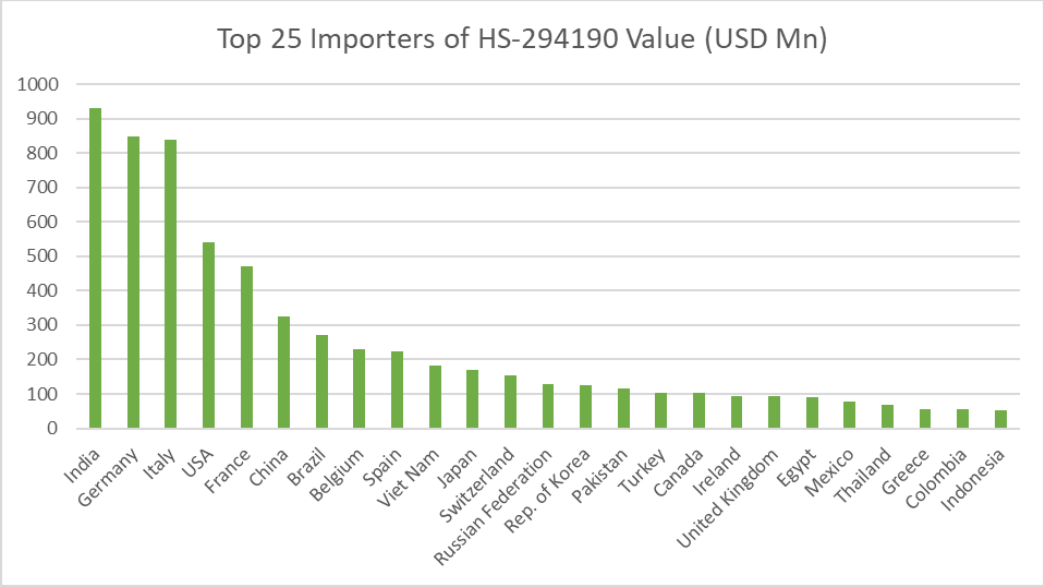

Figure 12:The top 25 importing nations of HS-294190 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

India, Germany and Italy recorded the highest HS-294190 imports in 2021. Their respective shares totalled 14.66%, 13.37% and 13.19% respectively.

7) HS-300310 – Medicaments containing penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (not in measured doses, not packaged for retail sale)

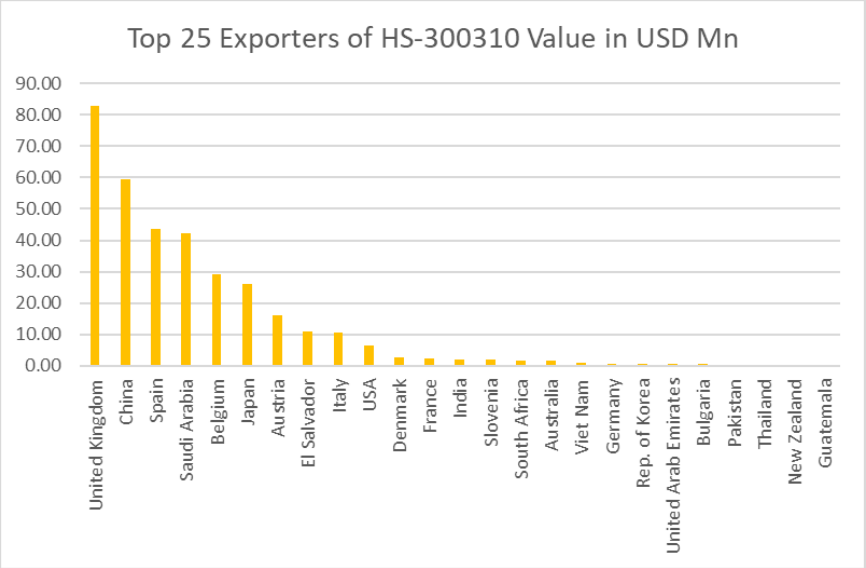

Figure 13: The top 25 exporting nations of HS-300310 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The top runner for the HS-300310 exports was the United Kingdom, China, Spain and Saudi Arabia. Their total values are $83 mn, $59 mn, $43.6 mn and $42.3 mn respectively.

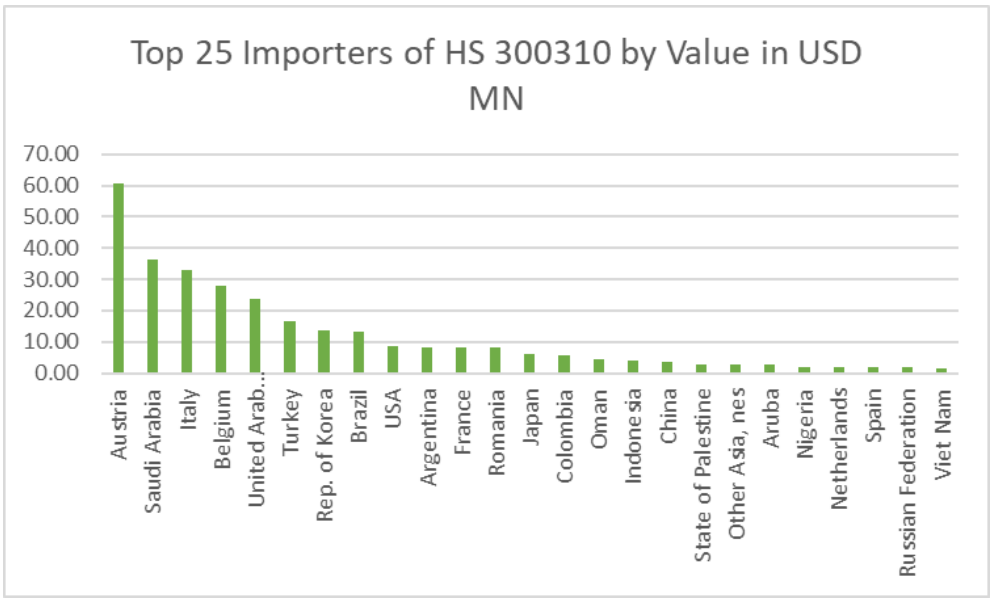

Figure 14:The top 25 importing nations of HS-300310 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Austria was the largest HS-300310 importer in 2021 with the trade value worth $60.56 mn. It was followed by Saudi Arabia and Italy with values at $36.19 mn and $32.78 mn respectively.

8) HS-300320 – Medicaments containing antibiotics other than penicillins, streptomycins and their derivatives, for therapeutic or prophylactic uses (not in measured doses, not packaged for retail sale)

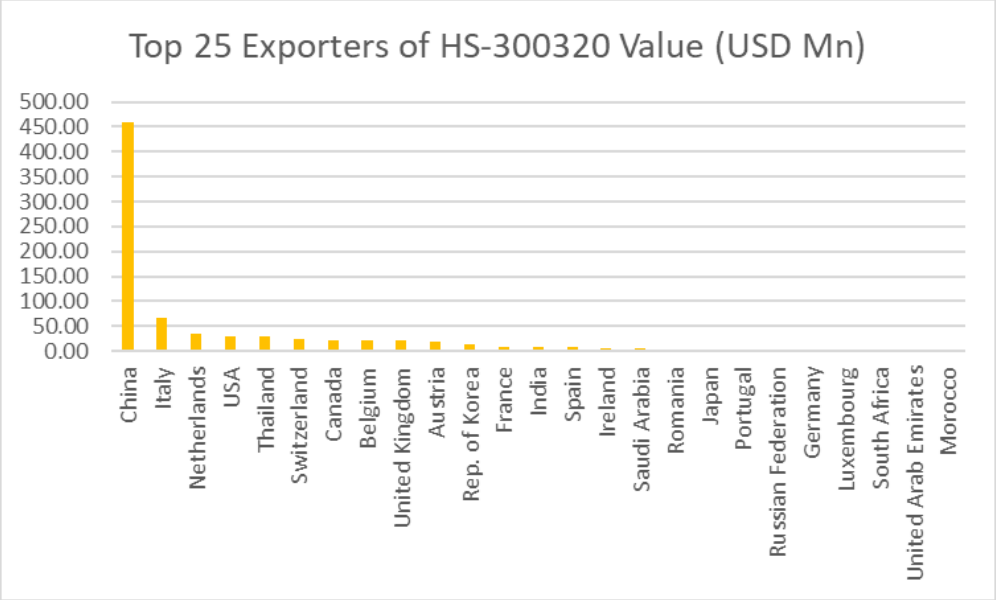

Figure 15: The top 25 exporting nations of HS-300320 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The highest HS-300320 exports were recorded by China. The trade value stood at $460.52 mn. The trade quantity totalled 58.5 mn kg.

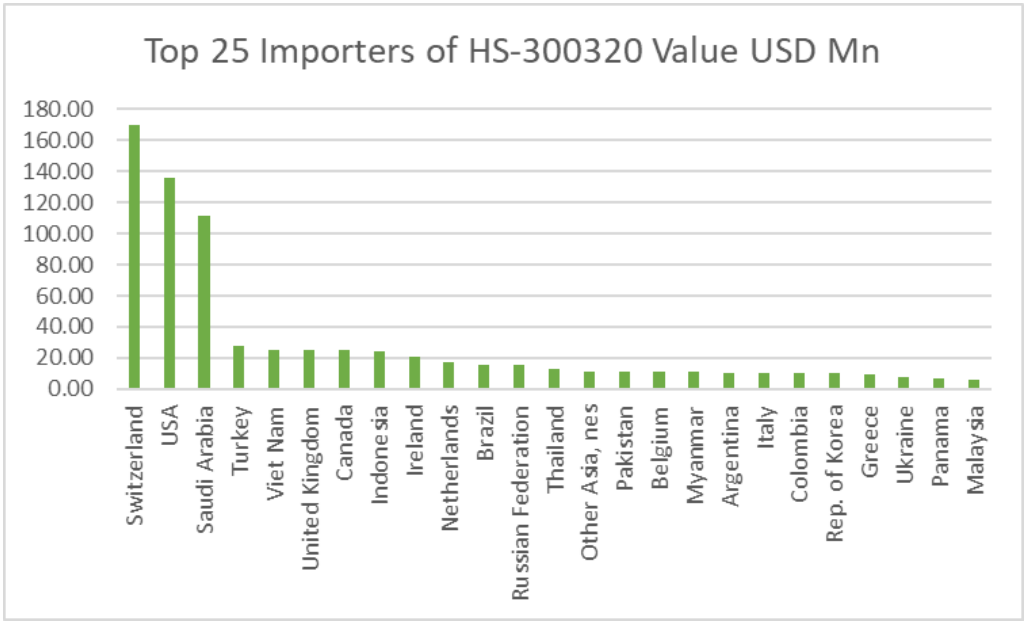

Figure 16: The top 25 importing nations of HS-300320 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Switzerland, the USA and Saudi Arabia were the largest HS-300320 importers. Collectively, their imports totalled $417 mn (56.7 %) of the top 25 importing nations.

9) HS-300410 – Medicaments containing penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (packaged for retail sale)

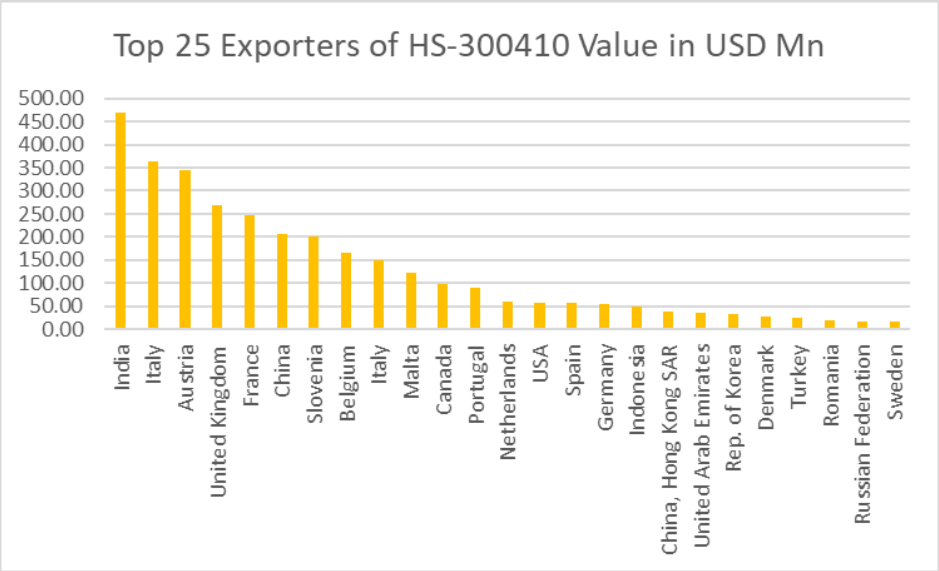

Figure 17: The top 25 exporting nations of HS-300410 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

During 2021, India recorded the highest HS-300410 exports. It was followed by Italy, Austria and UK. Their shares in exports totalled 14.56%, 11.24%, 10.6%, 10.65% respectively among the highest exporting nations.

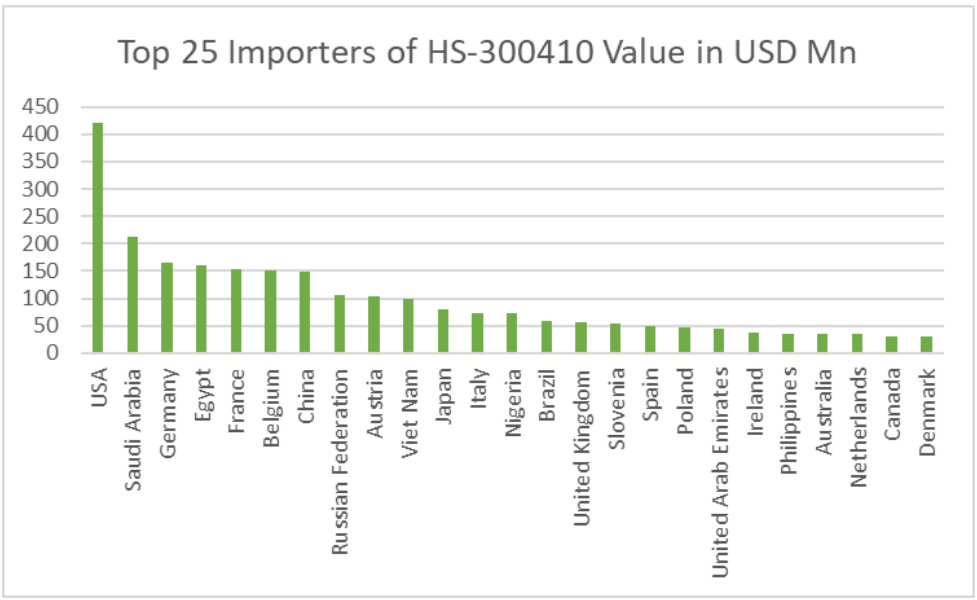

Figure 18:The top 25 importing nations of HS-300410 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The USA recorded the highest HS-300410 imports in 2021. The trade value stood at approximately $420 mn, totalling to 5.6 mn kg. It was followed by Saudi Arabia, Germany and Egypt.

10) HS-300420 – Medicaments containing antibiotics other than penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (packaged for retail sale)

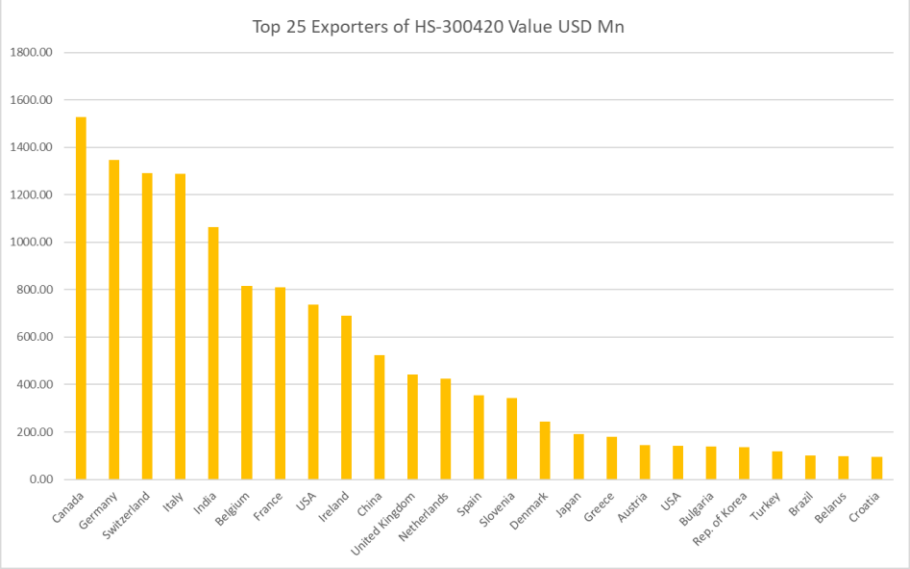

Figure 19: The top 25 exporting nations of HS-300420 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

Canada, Germany, Switzerland and Italy were the highest exporting nations for HS-300420. Their trade values were $1527.9 mn, $1346.8 mn, $1291.17 mn and $1288.69 mn respectively. Collectively, they attributed for 41.17% of exports among top 25 nations.

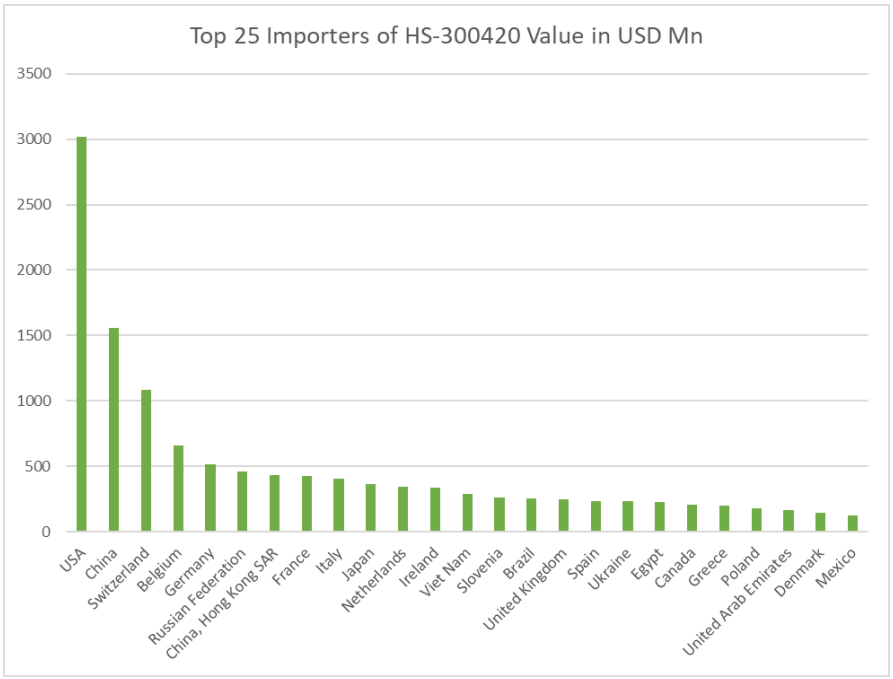

Figure 20: The top 25 importing nations of HS-300420 (value in USD mn)

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

USA was the largest HS-300420 importer, with an import figure of $3017.21 mn and a volume of 13.7 mn kg . It accounted for nearly 22.8% of the total trade value among the highest importing nations.

TARIFF ANALYSIS

1) HS-294110 – Antibiotics; penicillins and their derivatives with a penicillanic acid structure; salts thereof

The highest tariffs					
The Bahamas	45	Bhutan	10	Korea, Rep.	6.5
Iran	31	Cuba	10	Vietnam	6.25
Djibouti	26	Mayotte	10	Argentina	6
Bermuda	25	Nauru	10	Aruba	6
The Comoros	20	French Polynesia	8	Brazil	6
Pakistan	20	Saint Pierre And Miquelon	8	Chile	6
Algeria	15	Samoa	8	Uruguay	6
Anguila	15	India	7.5	Venezuela	6
The Maldives	15	Zambia	7.5	Indonesia	5.62

Table 1: Nations with the highest MFN rates for HS-294110

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The MFN tariff rate for HS-294110 is highest for the Bahamas at 45%. Iran (31%), Djibouti (26%) and Bermuda (25%) follow.

2) HS-294120 – Antibiotics; streptomycins and their derivatives; salts thereof

The highest tariffs					
The Bahamas	45	The Maldives	15	Saint Pierre And Miquelon	8
Djibouti	26	Bhutan	10	Samoa	8
Bermuda	25	Cuba	10	India	7.5
The Comoros	20	Mayotte	10	Zambia	7.5
Algeria	15	Nauru	10	Chile	6
Anguila	15	French Polynesia	8		

Table 2: Nations with the highest MFN rates for HS-294120

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The Bahamas tops the list for highest MFN rates (45%) for HS 294120.

3) HS-294130 – Antibiotics; tetracyclines and their derivatives; salts thereof

The highest tariffs							
The Bahamas	45	Anguila	15	Mayotte	10	India	7.5
Djibouti	26	The Maldives	15	Nauru	10	Zambia	7.5
Bermuda	25	Pakistan	11	French Polynesia	8	Korea, Rep.	6.5
The Comoros	20	Bhutan	10	Saint Pierre And Miquelon	8	Aruba	6
Algeria	15	Cuba	10	Samoa	8	Chile	6

Table 3: Nations with the highest MFN rates for HS-294130

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The Bahamas has the highest MFN tariff for HS- 294130. Djibouti comes second with an MFN tariff of 26%. Bermuda and the Comoros follow with 25% and 20% respectively.

4) HS-294140 – Antibiotics; chloramphenicol and its derivatives; salts thereof

The highest tariffs							
The Bahamas	45	India	7.5	Congo, Rep.	5	Nepal	5
Djibouti	26	Zambia	7.5	Cote D'Ivoire	5	Niger	5
Bermuda	25	Korea, Rep.	6.5	Dominica	5	Nigeria	5
The Comoros	20	Aruba	6	Equatorial Guinea	5	Sao Tome and Principe	5
Algeria	15	Chile	6	Ethiopia (Excludes Eritrea)	5	Senegal	5
Anguila	15	Antigua and Barbuda	5	Fiji	5	The Solomon Islands	5
The Maldives	15	Barbados	5	The Gambia	5	St. Vincent and the Grenadines	5
Pakistan	11	Belize	5	Ghana	5	Suriname	5
Bhutan	10	Benin	5	Guinea	5	Tajikistan	5
Cuba	10	Bolivia	5	Guinea-Bissau	5	Togo	5
Mayotte	10	Burkina Faso	5	Guyana	5	Trinidad and Tobago	5
Nauru	10	Cameroon	5	Indonesia	5	Uzbekistan	5
French Polynesia	8	The Central African Republic	5	Lao PDR	5	Yemen	5
Saint Pierre And Miquelon	8	Chad	5	Mali	5		
Samoa	8	Congo, Dem. Rep.	5	Mongolia	5		

Table 4: Nations with epy highest MFN rates for HS-294140

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The table shows the MFN rates for HS-294140. It follows a similar pattern as HS-294130.

5) HS-294150 – Antibiotics; erythromycin and its derivatives; salts thereof

The highest tariffs							
The Bahamas	45	The Maldives	15	French Polynesia	8	Argentina	6
Iran	32.25	Pakistan	11	Saint Pierre And Miquelon	8	Aruba	6
Djibouti	26	Bhutan	10	Samoa	8	Brazil	6
Bermuda	25	Cuba	10	India	7.5	Chile	6
Algeria	15	Mayotte	10	Zambia	7.5	Uruguay	6
Aguila	15	Nauru	10	Korea, Rep.	6.5	Venezuela	6

Table 5: Nations with the highest MFN rates for HS-294150

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The Bahamas impose the highest rate of the MFN tariff for HS-294150 with 45%. Iran stands second with 32.25%, Djibouti third, followed by Bermuda. Other nations such as Pakistan, India, Korea, Uruguay and Venezuela impose tariffs at 11%, 7.5%, 6.5%, 6% and 6% respectively.

6) HS-294190 – Antibiotics; n.e.s. in heading no. 2941

The highest tariffs							
The Bahamas	45	Samoa	8	The Central African Republic	5	Mongolia	5
Iran	27.1666	India	7.5	Chad	5	Nepal	5
Bermuda	25	Zambia	7.5	Congo, Dem. Rep.	5	Niger	5
The Comoros	20	Aruba	6	Cote D'Ivoire	5	Nigeria	5
Algeria	15	Chile	6	Dominica	5	Sao Tome and Principe	5
Anguila	15	Korea, Rep.	5.85714	Equatorial Guinea	5	Senegal	5
The Maldives	15	China	5.47368	Ethiopia (Excludes Eritrea)	5	Sierra Leone	5
Pakistan	10.8571	Antigua and Barbuda	5	Fiji	5	The Solomon Islands	5
Bhutan	10	Bangladesh	5	The Gambia	5	St. Vincent and the Grenadines	5
Cuba	10	Barbados	5	Ghana	5	Suriname	5
Djibouti	10	Belize	5	Guinea	5	Tajikistan	5
Mayotte	10	Benin	5	Guinea-Bissau	5	Togo	5
Nauru	10	Bolivia	5	Guyana	5	Trinidad and Tobago	5
French Polynesia	8	Burkina Faso	5	Lao PDR	5	Uzbekistan	5
Saint Pierre And Miquelon	8	Cameroon	5	Mali	5	Yemen	5

Table 6: Nations with the highest MFN rates for HS-294190

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The Bahamas, yet again, leads the list of highest tariffs. The highest MFN for the HS-294190 rate stands at 45%. Next in line are Iran (27.17%), Bermuda (25%) and the Comoros (20%). Pakistan imposes 10.85% and India 7.5%.

7) HS-300310 – Medicaments containing penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (not in measured doses, not packaged for retail sale)

The highest tariffs							
Iran	34.5	Argentina	11.43	India	10	Tunisia	10
Morocco	17.5	Brazil	11.43	Jamaica	10	Antigua and Barbuda	8.33
French Polynesia	15	Uruguay	11.43	Lao PDR	10	Djibouti	8
Mexico	15	Pakistan	11	Montserrat	10	Korea, Rep.	8
Nepal	15	Barbados	10	Sudan	10		
Paraguay	11.43	Congo, Dem. Rep.	10	Suriname	10		
Venezuela	11.43	Guyana	10	Thailand	10		

Table 7: Nations with the highest MFN rates for HS-300310

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The MFN import tariffs are the highest for imports to Iran at 34.5%. Morocco stands second with 17.5%. French Polynesia, Mexico and Nepal charge 15% on imports.

8) HS-300320 – Medicaments containing antibiotics other than penicillins, streptomycins and their derivatives, for therapeutic or prophylactic uses (not in measured doses, not packaged for retail sale)

The highest tariffs							
Iran	34.5	Montserrat	12	Thailand	10	Brazil	6.7
Morocco	17.5	Suriname	12	Tunisia	10	Uruguay	6.7
French Polynesia	15	Pakistan	11	Djibouti	8	Argentina	6.69
Nepal	15	Jamaica	10.7	Korea, Rep.	8	Paraguay	6.69
Mexico	15	Congo, Dem. Rep.	10	St. Lucia	8	Venezuela	6.69
Barbados	12	India	10	St. Vincent and the Grenadines	8		
Guyana	12	Lao PDR	10	Trinidad and Tobago	8		

Table 8: Nations with the highest MFN rates for HS-300320

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The MFN import tariffs are the highest for imports to Iran at 34.5%. Morocco stands second with 17.5%. French Polynesia, Mexico and Nepal charge 15% on imports.

9) HS-300410 – Medicaments containing penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (packaged for retail sale)

The highest tariffs							
Iran	35	Argentina	11.43	Mexico	10	Bolivia	7.5
Pakistan	15.5	Brazil	11.43	Montserrat	10	Morocco	6.78571
Anguila	15	Antigua and Barbuda	10	Sudan	10	St. Lucia	6.67
Congo, Dem. Rep.	15	Barbados	10	Suriname	10	St. Vincent and the Grenadines	6.67
French Polynesia	15	Colombia	10	Thailand	10	Trinidad and Tobago	6.66666
Nepal	15	Guyana	10	Tunisia	10	Aruba	6
Uruguay	12	India	10	Zimbabwe	10	Chile	6
Paraguay	11.43	Jamaica	10	Djibouti	8	China	6
Venezuela	11.43	Lao PDR	10	Korea, Rep.	8	Peru	6

Table 9: Nations with the highest MFN rates for HS-300410

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The MFN rates for HS-300410 highlights that Iran imposes a tariff rate of 35%, Pakistan 15.5% and Congo Democratic Republic, Anguila, French Polynesia and Nepal 15%.

10) HS-300420 – Medicaments containing antibiotics other than penicillins, streptomycins or their derivatives, for therapeutic or prophylactic uses (packaged for retail sale)

The highest tariffs							
Iran	39.75	Montserrat	12	Zimbabwe	10	Brazil	6.7
Anguila	15	Suriname	12	Colombia	8.33	Argentina	6.69230
French Polynesia	15	Pakistan	11	Djibouti	8	Venezuela	6.69
Nepal	15	Congo, Dem. Rep.	10	Korea, Rep.	8	Bolivia	6.67
Antigua and Barbuda	12	India	10	St. Lucia	8	Paraguay	6.5
Barbados	12	Lao PDR	10	St. Vincent and the Grenadines	8		
Guyana	12	Thailand	10	Trinidad and Tobago	8		
Jamaica	12	Tunisia	10	Uruguay	6.74		

Table 10: Nations with the highest MFN rates for HS-300420

Source: Generated via the World Integrated Trade Solution software (WITS, 2023)

The MFN rates for HS-300420 are the highest for Iran (39.75%), Aguila, French Polynesia, Nepal (15%) as well as Antigua and Barbuda, Barbados, Guyana, Jamaica, Montserrat and Suriname (12%).

Conclusions

Trade data highlights China's export dominance for most antibiotics: HS-294110, HS-294120, HS-294130, HS-294140, HS-294150, HS-294190. The top player for the antibiotic medicaments covered under HS-300310 was the United Kingdom with an export value of $83 mn, followed by China at $59.6 mn. India has been the largest exporter of antibiotic medicaments covered under HS-300410 at $469.73 mn. Canada, Germany, Switzerland and Italy were the highest exporting nations for medicaments covered under HS-300420. Their trade stood at $1527.9 mn, $1346.8 mn, $1291.17 mn and $1288.69 mn respectively.

Import figures for the above-mentioned HS codes underline that India forms the largest importer of most antibiotics, namely: HS-294110, HS-294130, HS-294150, HS-294190. Chile leads for HS-24910, Austria for HS-300310, the US for HS-300410 and HS-300420, Switzerland for HS-300320. Concerning HS-294120, the European Union ($12.519 mn) and India ($12.42 mn) are the top importers.

Analysis of the Most Favoured Nation (MFN) Tariffs highlights that the largest import tariffs are imposed by Bahamas at 45% for most product lines – HS-294110, HS-294130, HS-294140, HS-294150, HS-294190. Iran charges the highest tariffs at 34.5% for HS-300310 and HS-300320, 35% for HS-300410, 39.75% for HS-300420. Djibouti, Bermuda and the Comoros are also among the highest MFN charging nations. The lowest tariff imposed across each product category is zero. The prominent nations with zero MFN rates for all product lines are Canada, Singapore, Hong Kong, Australia.

A major policy implication emerging from this study is that countries ought to take a deeper look at the trends in trade and tariffs on antimicrobial drugs on a priority basis, since this has to do with lives of real people. Unnecessary blanket tariffs meant for tariff revenue should be avoided, as we find this in many countries that have hardly any production capacity for these drugs (such as the Bahamas, Djibouti, Bermuda, the Comoros, etc.).

The bigger players in the sector, both in terms of imports and exports, have relatively lower tariffs, but there is still a lot of scope of reducing these tariffs to ensure that these drugs are available at affordable prices to people at large. Industrial policy motivations to levy tariffs in order to protect the domestic industry against import competition may also need to be done in a measured manner, because this is about health and safety of people and not just another industry. Having said that, for health security purposes, it makes sense to develop domestic production capacity and supply chains. That can be done based on international partnerships, R&D, domestic tax and other policy incentives like the Production Linked Incentives (PLI) scheme in India (rather than tariffs).

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References

1. Adedeji, W. (2016). The treasure called antibiotics. *Annals of Ibadan Postgraduate Medicine, 14*(2), 56-57. [Google Scholar]
2. Bauer, M. (2017). The compounding effect of tariffs on medicines: Estimating the real cost of emerging markets' protectionism. *European Centre for International Political Economy*. [Google Scholar]
3. Bauer, M., & Lamprecht, Ph. (2021). How tariffs impact access to medicines. *Geneva Network*. Retrieved from: [Link]
4. Hanefeld, J., Khan, M., Tomson, G., & Smith, R. (2017). Trade is central to achieving the sustainable development goals: A case study of antimicrobial resistance. *The BMJ, 358*. [Google Scholar] [CrossRef]

5. Helble, M., & Shepherd, B. (2017). Trade in health products: Reducing trade barriers for better health. *ADBI Working Paper 643*. Tokyo: Asian Development Bank Institute. [Google Scholar]
6. Laxminarayan, R., Matsoso, P., Pant, S., Brower, C., Røttingen, J. A., Klugman, K., & Davies, S. (2016). Access to effective antimicrobials: a worldwide challenge. *The Lancet*, *387*(10014), 168-175. [Google Scholar] [CrossRef]
7. Mendelson, M., Røttingen, J. A., Gopinathan, U., Hamer, D. H., Wertheim, H., Basnyat, B., ... & Balasegaram, M. (2016). Maximising access to achieve appropriate human antimicrobial use in low-income and middle-income countries. *The Lancet*, *387*(10014), 188-198. [Google Scholar] [CrossRef]
8. Requejo, J. H., Bryce, J., Victora, C., Deixel, A., Wardlaw, T., Dwivedi, A., ... & Zimmerman, S. (2013). Accountability for maternal, newborn and child survival: The 2013 Update. *Geneva: World Health Organization and UNICEF*. Retrieved from: [Link]
9. Stevens, P., & Banik, N. (2020). Abolishing pharmaceutical and vaccine tariffs to promote access. *Geneva Network*. [Google Scholar]
10. The National Bureau of Economic Research (2019). Reductions in mortality rates and health disparities with the introduction of penicillin. *The Bulletin on Health, 2*. Retrieved from: [Link]
11. The WHO paper "Meeting report: Antibiotic shortages: Magnitude, causes and possible solutions" (2018). *Norwegian Directorate of Health*. Retrieved from: [Link]
12. The World Health Organization (2004). *The World Medicines Situation* (2nd edition). Retrieved from: [Link]
13. The World Integrated Trade Solution software – WITS (2023). Retrieved from: [Link]
14. The WTO Pharma Agreement (1994). Retrieved from: [Link]
15. Vickers, B., & Ali, S. (2020). Prioritising the poor: LDCs and trade in COVID-19-related medical supplies. *The Commonwealth Trade Hot Topics Series, 164, 1-20*. Retrieved from: [Link]
16. Zhang, J. (2018). China's removal of imported drug tariffs. *PharmExec.com (Master the Science of Success)*. Retrieved from: [Link]