

**REPORT ON
CONSUMPTION OF ANTIBIOTICS AND
OTHER MEDICINES**

**Submitted to
Department of Drug Administration (DDA)**

Bijulibazar, Kathmandu



**Submitted by
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EXECUTIVE SUMMARY

Drugs are one of the important components in the delivery of health care. For effective drug management a proper selection, quantification, procurement, distribution and use are important.

The objective of the study was to estimate the consumption of antibiotics and other medicines. The study covered fiscal year 2062/63 (2005/2006) and data were collected from the following sources

- Private importers
- UN Agencies / International Agencies/ NGOs/ INGOs
- Domestic manufacturing and repacking industries.
- Department of Custom
- Logistic Management Division (LMD), Department of Health Services.
- National Tuberculosis Center (NTC)
- National STI and HIV/AIDS Center.
- Public and private medical colleges and hospitals importing medicines.
- Two major hospitals of Kathmandu

The data from each unit were entered into Excel and analyzed.

The results show:

- Allopathic drugs worth Rs. 4 billion 985 million in retail value were sold through private importers.
- Ayurvedic/Unani drugs worth Rs.347 million, veterinary drugs worth Rs. 201 million and homeopathic drugs worth Rs. 4 million were sold through private importers.
- The total value of drugs imported through Government, UN agencies, INGO's/ NGO's was Rs. 889 million.
- Allopathic drugs worth Rs. 3 billion 187 million in retail value were sold from domestic industries.
- Ayurvedic/Unani drugs worth Rs. 247 million and veterinary drugs worth Rs.121 million in retail value were sold from domestic industries.
- The value of drugs imported through different custom points was Rs.5 billion 103 million.

- Amoxicillin was the top selling drug from the domestic industries.
- Thirty-five percent of the total consumption was met through domestic industries, remaining was through import by both public and private sector.
- Total consumption of allopathic drugs was Rs.9 billion 61 million. (approx US\$ 127 million; US\$ 1=Rs. 71.35)
- About 30% of total consumption of drugs was covered by antibiotics.
- Some common pathogens are resistant to a number of antibiotics, antibiotic surveillance should be developed.

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1. BACKGROUND

In 1979, the importation of medicines in Nepal was estimated to be worth Rs.114.6 million. Another study conducted in 1988 showed medicines worth Rs.385 million were imported in the country. A study in 1992 showed the total consumption of medicines to be Rs.1532 million in sales value. The study conducted by PHON for DDA found that modern medicines of Rs.5907 million in retail value were consumed in the year 1999/2000. Similarly, the last study by PHON for DDA found allopathic medicines worth Rs.10659 million in retail value were consumed in the country in year 2004/05. The study also estimated the retail value of consumption of ayurvedic/unani, veterinary and homeopathic drugs. The same study also showed the share of domestic allopathic industries in the total consumption of medicines in the country.

2. OBJECTIVES

The general objective of the study was to estimate the consumption of antibiotics and other medicines in 2062/63 (2005/06).

The specific objectives were to

- estimate the value of antibiotics and other medicines including vaccines
- estimate the value of local production of medicines including antibiotics
- estimate the value of medicines procured by MOHP through import
- estimate the value of medicines procured by INGOs and NGOs through import
- estimate the retail sale value of imported and local productions
- identify common bacteria from common specimens
- identify resistance pattern of common bacteria

3. SIGNIFICANCE OF THE STUDY

Estimating the national consumption of medicines can serve as a basis for planning an effective drug management as well as for making self-reliant drug production through the national industries.

4. METHODOLOGY

The study covered the fiscal year 2062/63 (2005/2006) and data were collected from following sources:

4.1. Data Source

- Private importers
- UN Agencies / International Agencies/ NGOs/ INGOs
- Domestic manufacturing and repacking industries.
- Department of Custom
- Logistics Management Division (LMD), Department of Health Services.
- National Tuberculosis Center (NTC)
- National STI and HIV/AIDS Center.
- Public and private medical colleges and hospitals importing medicines.
- Two major hospitals of Kathmandu

4.2. Sampling

The tables I to III show all custom points importing medicines of different systems, all domestic medicines manufacturers including repackaging industries of different systems, and all importers of different systems for collecting data. Similarly, sensitivity/resistant pattern of common isolates from four major hospitals from Kathmandu for three months (June-August, 2006) were also included.

Table I: Custom Points

1. Biratnagar	4. Tatopani
2. Tribhuvan International Airport	5. Bhairahawa
3. Birgunj	6. Nepalgunj

**Table II A: Domestic Allopathic Medicines
Manufacturers and Repackaging Industries**

1. Alive Pharmaceuticals Pvt. Ltd	Biratnagar
2. Amie Laboratories Pvt. Ltd	Janakpur
3. Amtech Med. Pvt. Ltd.	Biratnagar
4. Apex Pharmaceuticals Pvt. Ltd	Birgunj
5. Arya Pharmalab Pvt. Ltd	Birgunj
6. Asian Pharmaceuticals Pvt. Ltd	Bhairahawa
7. Birat Pharmalab Pvt. Ltd	Biratnagar
8. Chemidrug Industries	Kathmandu
9. Concept Pharmaceuticals (Nepal) Pvt. Ltd	Birgunj
10. CTL Pharmaceuticals Pvt. Ltd	Bhaktapur
11. Curex Pharmaceuticals Pvt. Ltd	Kavre
12. Danium Laboratories Pvt. Ltd	Birgunj
13. Deurali-Janta Pharmaceuticals Pvt. Ltd	Kathmandu
14. Dingla Pharmaceuticals Pvt. Ltd	Biratnagar
15. Everest Pharmaceuticals Pvt. Ltd	Bhaktapur
16. Florid Laboratories Pvt. Ltd.	Lalitpur
17. G. D. Pharmaceuticals Pvt. Ltd	Birgunj
18. Hukam Pharmaceuticals Pvt. Ltd.	Bhaktapur
19. Lomus Pharmaceuticals Pvt. Ltd	Kathmandu
20. Manoj Pharmaceuticals Pvt. Ltd	Dharan
21. Manoj Chemical Works	Dharan

22. Mark Formulation Pvt. Ltd.	Kathmandu
23. Nepal Chemicals Works	Biratnagar
24. Milan Pharmaceuticals Pvt. Ltd	Biratnagar
25. National Healthcare Pvt. Ltd.	Birgunj
26. Nepal Pharmaceuticals Lab Pvt. Ltd	Birgunj
27. Omnica Laboratories Pvt. Ltd.	Bhaktapur
28. Pharmaceutical Company of Nepal Pvt. Ltd	Kalaiya
29. Pharmaco Industries Pvt. Ltd	Kathmandu
30. Quest Pharmaceuticals Pvt. Ltd	Birgunj
31. Raj Chemical Works (Repacking) Pvt. Ltd	Jhapa
32. Nepal Aushadhi Limited	Kathmandu
33. S. R. Drugs Laboratories Pvt. Ltd.	Kathmandu
34. Shiv Pharmaceuticals Lab Pvt. Ltd	Dharan
35. Siddhartha Pharmaceuticals Pvt. Ltd	Bhairahawa
36. Simca Laboratories Pvt. Ltd	Bhaktapur
37. Sumy Pharmaceuticals Pvt. Ltd.	Navalparasi
38. Time Pharmaceuticals Pvt. Ltd	Nawalparasi
39. Unique Pharmaceuticals Pvt. Ltd	Birgunj
40. Vijayadeep Pharmaceuticals Pvt. Ltd	Lalitpur
41. Vijaydeep Laboratories Pvt. Ltd.	Lalitpur

Table II B: Domestic Veterinary Medicines Manufacturers

1.	Asian Pharmaceuticals Pvt. Ltd	Bhairahawa
2.	CTL Pharmaceuticals Pvt. Ltd	Bhaktapur

3.	Medivet Pharmaceuticals Lab. Pvt. Ltd.	Bhaktapur
4.	Milan Pharmaceuticals Pvt. Ltd	Biratnagar
5.	Nepal Pharmaceuticals Lab Pvt. Ltd	Birgunj
6.	Nepal Veterinary Pvt. Ltd.	Chitwan
7.	Serin Veterinary Pvt. Ltd.	Kathmandu

Table II C: Domestic Ayurvedic/ Unani Manufacturers

1.	AMPCO Laboratories Pvt. Ltd.	Janakpur
2.	Anmol Jadibuti Udyog	Lalitpur
3.	Annapurna Ayurvedic Udyog	Pokhara
4.	Arogya Bhawan Works	Kathmandu
5.	Chandra Ayurved Bhawan	Birgunj
6.	Chirayu Ayurved	Dhading
7.	Dabur Nepal	Birgunj
8.	Fleur Himalayan Ltd.	Birgunj
9.	Gorkha Ayurved Udyog	Gorkha
10.	Gyawali Ayurved Aushadhalaya Udyog	Butwal
11.	Herbs Production and Processing Co. Ltd.	Kathmandu
12.	Himal Herbal Product	Kathmandu
13.	Himalayan Herbal Ayurved Preparation	Kathmandu
14.	Himalayan Special Herbals Industries	Kathmandu
15.	Jeevandata Ayurvedic Udyog	Kathmandu
16.	Jyoti Ayurved Bhawan	Birgunj
17.	Kalika Ayurvedic	Chitwan
18.	Kunfen Aausadhi Udyog	Kathmandu
19.	Lumbini Ayurvedic Pharmacy	Butwal

20.	N. N. Herbals Industries Pvt. Ltd.	Kathmandu
21.	Nepal Herbal Industries Pvt. Ltd.	Birgunj
22.	Pandit Ayurved Udyog	Butwal
23.	Pokhareli Ayurvedic Udyog	Pokhara
24.	Sagarmatha Ayurvedic Aushadhi Udyog	Lalitpur
25.	Shree Gyawali Ayurvedic Udyog	Kaski
26.	Shree Krishna Aushadhalaya	Kathmandu
27.	Shree Pashupati Ayurved Ausadhalaya	Rautahut
28.	Siddha Ayurvedic Pharmacy Pvt. Ltd.	Rupendehi
29.	Siddha Kali Herbal Product	Kathmandu
30.	Siddhartha Jadibuti Udyog	Kathmandu
31.	Singhdurbar Vaidhyakhana	Kathmandu
32.	Sita Ayurved Center	Birgunj
33.	Suri Herbal Products	Bhaktapur

Table III: List of Allopathic, Ayurvedic/Unani, Veterinary and Homeopathic Importers

A. Allopathic Importers

1.	Alliance Enterprises	Kathmandu
2.	Alpine Pharmaceuticals Dist. Pvt. Ltd.	Kathmandu
3.	Amaravati International Pvt. Ltd.	Kathmandu
4.	B.R. Medical Suppliers Pvt. Ltd.	Kathmandu
5.	Balajee Medicine Distributors	Birgunj
6.	Banerjee & Brothers	Birgunj
7.	Bashundhara Drug Distributors	Kathmandu
8.	Bhajuratna Pharma Pvt. Ltd.	Birgunj
9.	C E Pharma Pvt. Ltd.	Kathmandu
10.	Chao Sati Pharma	Birgunj

11.	Collection Pharma	Kathmandu
12.	Ethimed Concern Private Limited	Kathmandu
13.	Excel Trading Concern	Birgunj
14.	Farmanura Pvt. Ltd.	Kathmandu
15.	Formed Pvt. Ltd.	Kathmandu
16.	G. Pharmalink Pvt. Ltd.	Birgunj
17.	Gunjeshwari Pharma	Birgunj
18.	Gupta & Sons Medical Hall	Birgunj
19.	Instyle Trading Concern	Kathmandu
20.	Jay Medico Distributors	Nepalgunj
21.	Kalptaru Traders	Kathmandu
22.	Keyal Trading Concern	Birgunj
23.	Liana Trade Concern Pvt. Ltd	Birgunj
24.	Link-Med Pvt. Ltd.	Kathmandu
25.	Luna Trading Co. P. Ltd.	Birgunj
26.	Maheshwari Distributors Pvt. Ltd.	Kathmandu
27.	Medi Impex	Kathmandu
28.	Medi Sales Pvt. Ltd.	Kathmandu
29.	Medi Surg Impex	Kathmandu
30.	Mediaids (Nuraz) Pvt. Ltd.	Kathmandu
31.	Medicine Distributor Centre	Kathmandu
32.	Medinura Pvt. Ltd.	Kathmandu
33.	Meditron International	Kathmandu
34.	Minko Pharma Link	Kathmandu
35.	National Medicine Concern	Kathmandu
36.	Nepal Drug Distributors	Kathmandu

37.	Nicco Pharma International	Birgunj
38.	Niraj Pharmaceuticals Pvt. Ltd.	Birgunj
39.	Nishant Pharmaceuticals Pvt. Ltd.	Birgunj
40.	Pharma House	Kathmandu
41.	Pharma Trade International Pvt. Ltd	Kathmandu
42.	Pharmachem Pvt. Ltd.	Birgunj
43.	Prime Med International Pvt. Ltd.	Kathmandu
44.	Priya Trading Pvt. Ltd.	Kathmandu
45.	R.S. Pharma Link Pvt. Ltd	Birgunj
46.	R.S. Pharmaceuticals Enterprises	Kathmandu
47.	Rainbow Trade Concern Pvt Ltd	Birgunj
48.	Impex Speedways (Pharma Division)	Kathmandu
49.	Sajha Swastha Sewa	Kathmandu
50.	Sanjivani Trading Pvt. Ltd. (Pharma Div.)	Kathmandu
51.	Shakti Medicare Suppliers Pvt. Ltd.	Kathmandu
52.	Shivam Aushadi Pvt. Ltd	Birgunj
53.	Shuvam Aushadi Pvt. Ltd	Birgunj
54.	Shree Om Brothers Pvt. Ltd.	Kathmandu
55.	Shreejana Pharmaceuticals Pvt. Ltd.	Kathmandu
56.	Shubh Labh Pharma Link	Birgunj
57.	Super Distributors Pvt. Ltd.	Birgunj
58.	Swastik Distributors	Birgunj
59.	Tridev Pharmaceuticals Pvt. Ltd.	Kathmandu
60.	Trishul Pharma Trade	Kathmandu
61.	Unique Trade Link Pvt. Ltd.	Birgunj
62.	Universal Trade Link	Kathmandu

- | | | |
|-----|--|-----------|
| 63. | Upakar Medical Hall | Kathmandu |
| 64. | Ways International Pharma Division | Kathmandu |
| 65. | Yeti Pharmachem Distributors Pvt. Ltd. | Kathmandu |
| 66. | Yetichem Distributors Pvt. Ltd. | Kathmandu |
| 67. | Zen Pharmaceuticals Pvt. Ltd. | Kathmandu |

B. Veterinary Importers

- | | | |
|-----|---|-----------|
| 1. | Bhajuratna Pharma Pvt. Ltd. | Birgunj |
| 2. | Bhatbhateni International Pvt. Ltd. | Kathmandu |
| 3. | Biovet Pharma | Kathmandu |
| 4. | Divas Vet. Enterprises | Janakpur |
| 5. | Kantipur Vet. Suppliers | Kathmandu |
| 6. | Kathmandu Pharma Vet. Pvt. Ltd. | Kathmandu |
| 7. | Khukuri Enterprises | Kathmandu |
| 8. | Lotus Vet. International Trade Link Pvt. Ltd. | Kathmandu |
| 9. | Luna Trading | Birgunj |
| 10. | Munal Biovet Pharma | Kathmandu |
| 11. | Nepal Vet. Trading | Birgunj |
| 12. | Nimbus International Co. Pvt. Ltd. | Kathmandu |
| 13. | Pharmachem Pvt. Ltd. | Birgunj |
| 14. | Sabha International Trading | Kathmandu |
| 15. | United Pharma INC | Kathmandu |
| 16. | Veterinary Concern Pvt. Ltd. | Kathmandu |

C. Homeopathic Importers

- | | | |
|----|----------------------|------------|
| 1. | Everest Homeo Medico | Itahari |
| 2. | Jyoti Homeo Clinic | Biratnagar |

D. Ayurvedic/Unani Importers

1. Aaju Pharmaceuticals	Kathmandu
2. Alpha Medicine Distributors	Kathmandu
3. Alpine Pharma Distributors	Kathmandu
4. Anil Medical Hall	Lahan
5. Anurag Ayurvedic Concern	Butwal
6. Ganesh Pharma	Janakpur
7. Ganga Aushadhalaya	Chitwan
8. Glory Pharma Distributors	Birgunj
9. GMP Pharma	Kathmandu
10. Godavari Ayurved Store	Birgunj
11. Himgiri Medico Pharmaceuticals Distributors	Biratnagar
12. Jalan Pharma Distributors	Janakpur
13. Janata Ayurved Bhawan	Butwal
14. Jaya Medico Distributors	Nepalgunj
15. Kalpabrikshya Enterprises	Butwal
16. Laxmi Trade Concern	Biratnagar
17. Life Ayurved Aushadhalaya	Butwal
18. Lumbini Impex Pvt. Ltd.	Kathmandu
19. Luna Trading Company Pvt. Ltd.	Birgunj
20. Medico Enterprises	Kathmandu
21. Mediwave International	Kathmandu
22. Nepal Drug Distributors	Kathmandu
23. Pasupati Ayurved Bhawan	Bhairahawa
24. Pharmachem Pvt. Ltd.	Birgunj
25. Popular Pharma	Biratnagar

26. R. S. Enterprises	Kathmandu
27. Raghav Agencies and Trading Co.	Nepalgunj
28. Rajesh Medicine Distributors Pvt. Ltd.	Gaur
29. Shakti Medicine Suppliers	Kathmandu
30. Shankharapur Pharmaceuticals	Kathmandu
31. Shiva Ayurved Stores	Kathmandu
32. Shree Om Brothers Pvt. Ltd.	Kathmandu
33. Shree Ram Distributors	Birgunj
34. Shree Ram Drug House	Birgunj
35. Sunrise Herbal Medicine Distributors	Birgunj
36. Themjo Enterprises	Kathmandu
37. Upakar Medical Hall	Nepalgunj

4.3. Data Collection

The data were collected by using five different instruments (Annex I - V). The instruments were field-tested in Kathmandu by the investigators and supervisors. The field-tested instruments were presented to DDA and finalized incorporating comments and suggestions received from the discussions. The data were collected by five teams, each team comprising research assistants and a supervisor. The supervisors and research assistants were pharmacy graduates.

Data collection from domestic manufacturers included

- Value of each product in retail price.

Data collection from importers included

- Value of each product in retail price (including free goods).

Data collection from the custom points

- Value of imported medicines recorded under different harmonic codes from six custom points.

Data collection from the Department of Health Services, hospitals, NGOs/INGOs included

- Value of medicines imported in rupees.

Data collection from the Hospitals of Kathmandu Valley included

- Sensitivity/resistant pattern of common pathogens from urine and blood samples.

4.4. Data Analysis

The data from each unit were entered into Excel and analyzed for the followings parameters.

Data from importers

- Total retail sales of all system of medicines.
- Product-wise retail sales value of allopathic medicines for human use.

Data from domestic industries

- Total retail sales of all system of medicines.
- Productwise retail sales value of allopathic medicines for human use

Data from customs (obtained as per harmonic codes, see annex VIII)

- Total import value of all allopathic medicines
- Total import value of ayurvedic/unani/herbal medicines.
- Total import value of homeopathic medicines.
- Total import value of veterinary medicines.

Value of antibiotics

- Total retail sales value of individual antibiotics.

Sensitivity/ resistant pattern of common microbes.

- Common isolates from urine and blood samples.
- Sensitivity/ resistant of common isolates.

5. RESULTS

The followings are the results based on the data from different sources.

5.1. Drug sales through importers

Table IV shows allopathic drugs worth Rs.4 billion 984 million in retail value (based on data from all importers) were sold during the fiscal year. Similarly, ayurvedic/unani drugs worth Rs.347 million (based on data from 30 importers), veterinary (including allopathic and ayurvedic) drugs worth Rs.201million (based on data from 15 importers) and homeopathic drugs worth Rs.4 million (based on data from all importers) were sold in the year 2062/63 (2005/06).

Table IV: Drugs Sales in Retail Value

System	No of Importers	Retail Sales Value (Rs.)
Allopathic	67	4,984,892,914.91
Ayurvedic/Unani	30	347,140,553.86
Veterinary	15	201,027,750.39
Homeopathic	2	4,400,500.00

The table V shows the value of allopathic drugs imported through government institutions including the drugs imported by UN and international agencies for the government supply as well as through INGOs/NGOs. The total value of such import was Rs.889 million. The data does not include imports by diplomatic agencies (Embassies).

Table V: Imported by Govt. Agencies/ NGOs/ INGOs

Name of Institution	Direct Import	Donor Agency
B. P. Koirala Institute of Health and Sciences	2,884,786.29	-
Dhulikhel Hospital	-	182,500.00
Family Planning Association of Nepal	37,812.40	7,180,927.94
International Committee of Red Cross (ICRC)	-	5,500.00
Kailash Medical And Astro Society	186,200.00	-
Logistics Management Division (LMD)	200,120,415.64	-
Medicines Sans Frontiers (France)	3,744,140.00	-
Medicines Sans Frontiers (Holland)	6,045,525.52	-
National STI, HIV/AIDS Center	746,325.00	9,925,600.00
National Tuberculosis Center	-	94,159,896.80

Nepal CRS Company Pvt. Ltd.	-	49,410,078.30
Nepal Kidney Society	180,160.00	-
Nepal Netra Jyoti Association	-	504,170,236.80
Om Hospital And Research Center Pvt. Ltd.	2,739,291.00	-
Scheer Memorial Hospital	-	76,710.59
United Nursing Home	8,102,201.00	-
Total	224,786,856.85	665,111,450.43

Grand Total Rs. 889,898,307.28

- Not imported

5.2. Domestic manufacturing and repackaging industries

Table VI shows allopathic drugs worth Rs.3 billion 187 million were sold in retail value (based on data from 38 industries). Similarly, ayurvedic/unani drugs worth Rs.247 million (based on data from all 31 industries) and veterinary drugs worth Rs.121 million in retail value (based on data from all 7 industries) were sold.

Table VI: Sales in Retail Value of Domestic Manufacturing and Repackaging Industries

System	No of Company	Retail Sales Value (Rs.)
Allopathic	38	3,187,023,810.15
Ayurvedic/Unani	31	246,603,308.27
Veterinary	7	120,518,924.80

5.3. Consumption of medicines by system of medicines

Table VII shows the consumption of allopathic, ayurvedic/unani, veterinary (including allopathic and ayurvedic) and homeopathic drugs in the fiscal year 2005/06. Allopathic medicines worth Rs.9 billion 61 million, ayurvedic/unani worth Rs.593 million, veterinary worth Rs.321 million and homeopathic medicines worth Rs.4 million were consumed.

Table VII: Consumption of drugs by system of medicines

System	Import	Domestic Industries	Institution Import	Total	%
Allopathic	4,984,892,914.	3,187,023,810.	889,898,307.	9,061,815,033.	90.8
Ayurvedic/Unani	347,140,553.	246,603,308.	-	593,743,863.	5.9
Veterinary	201,027,750.	120,518,925.	-	321,546,676.	3.2

Homeopathic	4,400,500.	-	-	4,400,500.	0.1
Total				9,981,506,072.	

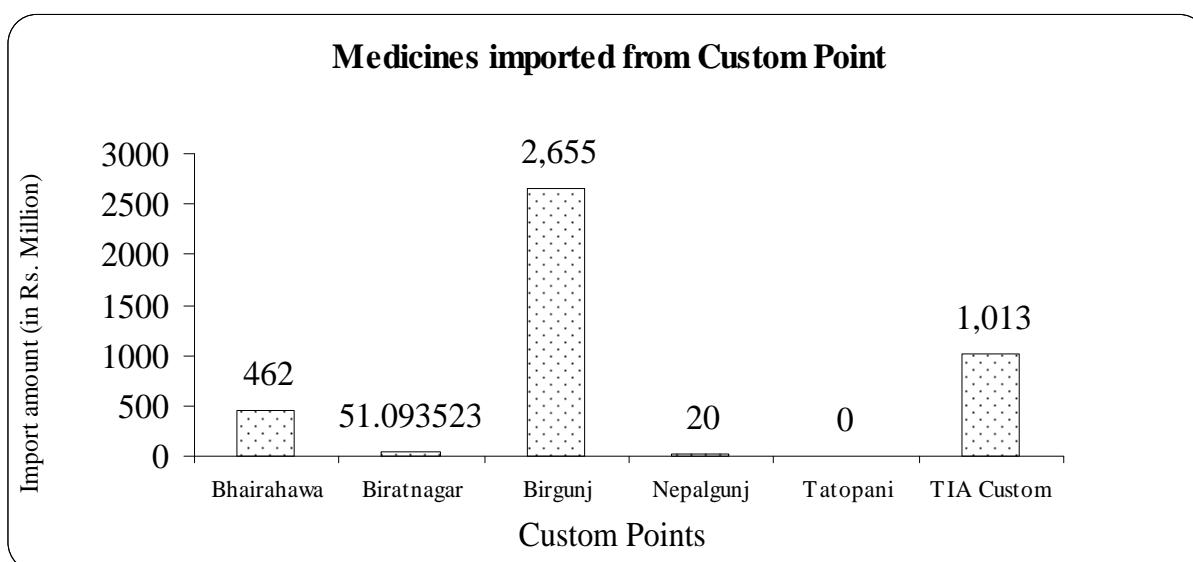
5.4. Data from custom points

Table VIII shows the value of medicines imported from the six custom points. Medicines were mostly imported through Birgunj Custom. There is a variation between total value of medicines imported from customs and total retail sales value through importers. The valuation of consignment at the custom is done not only based on the invoice amount, but other factors are also considered. Hence, difference between the data from importer and custom is obvious.

Table VIII: Data from Custom

Custom Points	Allopathic	Ayurvedic/ Unani	Veterinary	Homeopathic	Total
Bhairahawa	244,669,769	217,154,418	625,136	-	462,449,323
Biratnagar	25,711,381	5,451,082	15,269,915	4,661,145	51,093,523
Birgunj	3,295,386,248	247,686,927	12,295,372	-	2,655,368,547
Nepalgunj	14,174,945	6,418,600	-	-	20,593,545
Tatopani	-	-	-	-	-
Tribhuvan International Airport Custom	912,479,495	12,684,576	77,184,616	11,150,593	1,013,499,280
Total	4,492,421,838	489,395,603	105,375,039	15,811,738	5,103,004,218

- drugs not imported



5.5 Top 15 selling allopathic medicines from domestic industries

Table IX shows, amoxicillin, vitamin preparations, cough preparations, ciprofloxacin, and iron preparations in different dosage forms respectively were among the top 15 selling drugs in that fiscal year. The list of top 50 items is annexed (Annex VI)

Table IX: Top 15 selling allopathic drugs from domestic industries

SNo	Name of Drugs	Retail Value (Rs.)	Share of the total sales
1.	Amoxicillin	313,433,466.80	9.7
2.	Vitamin Preparations	206,280,984.16	6.4
3.	Cough Preparations	142,066,177.95	4.4
4.	Ciprofloxacin	132,435,024.05	4.1
5.	Iron Preparations	116,549,569.88	3.6
6.	Topical skin preparations	115,640,545.59	3.6
7.	Ibuprofen + Paracetamol	99,845,722.92	3.1
8.	Ofloxacin	86,948,436.51	2.7
9.	Anticold	85,384,780.86	2.6
10.	Paracetamol	77,384,618.68	2.4
11.	Cefixime	76,548,465.33	2.4
12.	Ampicillin + Cloxacillin	73,307,868.51	2.3
13.	Co-trimoxazole	70,856,270.58	2.2
14.	Metronidazole	70,044,520.92	2.2
15.	Albendazole	69,503,075.14	2.1
16.	Others	1,450,794,282.27	46.5

5.5. Top 15 selling allopathic medicines from Import

Table X shows, topical skin preparations, methyl ergometrine, diclofenac, vitamin preparations in different dosage forms respectively were among the top 15 selling drugs in that fiscal year. The list of top 50 items is annexed (Annex VII).

Table X: Top 15 selling allopathic drugs from Import

SNo.	Name of Drugs	Retail Value (Rs.)	Share of the total sales
1.	Topical Skin Preparations	280,135,607.69	5.6
2.	Methyl ergometrine	215,697,248.17	4.3
3.	Diclofenac	207,323,664.43	4.2
4.	Vitamin Preparations	198,755,244.39	4.0
5.	Large Volume Parenteral	188,227,866.76	3.8
6.	Cefadroxil	151,468,580.51	3.0
7.	Vaccines, Sera and Toxoids	139,086,428.23	2.8
8.	Cough Preparations	127,213,181.40	2.6
9.	Ciprofloxacin	109,830,664.26	2.2
10.	Amoxicillin	109,132,686.05	2.2
11.	Tizanidine	107,956,630.56	2.2
12.	Eye, Ear and Nasal Preparations	99,673,944.11	2.0
13.	Ceftriaxone	98,975,354.21	2.0
14.	Enzyme preparations	94,506,650.52	1.9
15.	Ampicillin + Cloxacillin	79,663,025.57	1.6
16.	Others	2,777,246,138.05	55.7

5.6. Top 15 selling allopathic medicines from domestic industries and import

Table XI shows the list of top 15 selling allopathic medicines based on domestic production and the import. Amoxicillin share the highest percentage among 15 drugs. On the other hand, methyl ergometrine, and vaccines, sera and toxoids were all imported.

Table XI: Top 15 selling allopathic drugs from domestic industries and import

SNo.	Name of Drugs	Retail Value (Rs.)	Share of Domestic Industries (%)	Share of Import (%)
1.	Amoxicillin	422,566,152.85	74.2	25.8
2.	Vitamin Preparations	406,053,246.31	50.8	49.2
3.	Topical Skin Preparations	395,776,153.28	29.2	70.8
4.	Cough Preparations	269,279,359.35	52.8	47.2
5.	Diclofenac	243,524,488.37	14.9	85.1
6.	Ciprofloxacin	242,265,688.31	54.7	45.3
7.	Methyl ergometrine	216,553,784.17	0.0	100.0
8.	Large Volume Parenteral	206,650,595.61	8.9	91.1
9.	Cefadroxil	189,125,186.40	19.9	80.1
10.	Metronidazole + Diloxanide	182,851,819.89	31.0	69.0
11.	Iron Preparations	173,425,838.40	67.5	32.5
12.	Ampicillin + Cloxacillin	152,970,894.08	47.9	52.1
13.	Ofloxacin	152,440,543.12	57.0	43.0
14.	Ibuprofen + Paracetamol	147,327,924.94	67.8	32.2
15.	Vaccines, Sera and Toxoids	145,186,405.00	0.0	100.0
16.	Others	4,625,918,644.98	37.9	62.1

5.7. Consumption of antibiotics

The total consumption of antibiotics in 2005/06 was Rs.2 billion 717million. of which, 48.7% was shared by domestic industries.

5.8. Top 15 antibiotics from domestic industries and import

Table XII shows the list of top 15 selling antibiotics based on domestic production and the import. The table also shows the percentage shared by both sources.

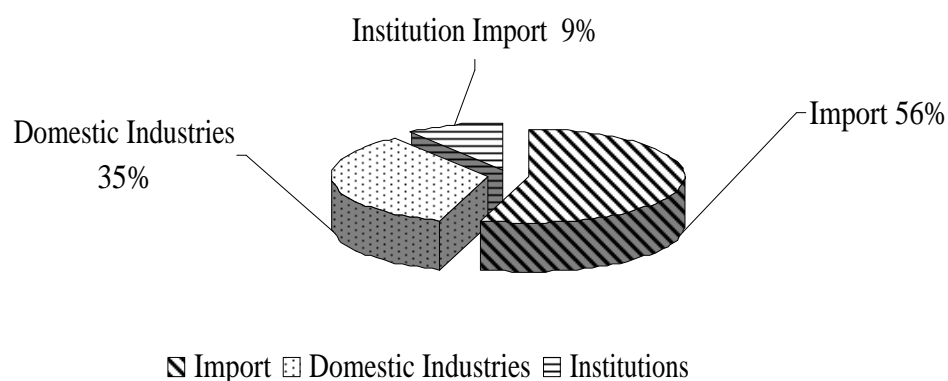
Table XII: Top 15 Selling Antibiotics from Domestic Industries and import

SNo	Antibiotics	Retail Value (Rs.)	Share of Domestic Industries (%)	Share of Import (%)
1	Amoxicillin	422,566,152.85	74.2	25.8
2	Ciprofloxacin	242,265,688.31	54.7	45.3
3	Cefadroxil	189,125,186.40	19.9	80.1
4	Metronidazole + Diloxanide	182,851,819.89	31.0	69.0
5	Ampicillin + Cloxacillin	152,970,894.08	47.9	52.1
6	Ofloxacin	152,440,543.12	57.0	43.0
7	Metronidazole	126,251,827.65	55.5	44.5
8	Ceftriaxone	98,975,354.21	0.0	100.0
9	Cephalexin	98,104,900.21	37.6	62.4
10	Cefixime	91,006,905.90	84.1	15.9
11	Chloramphenicol	89,615,266.89	61.4	38.6
12	Co-trimoxazole	81,559,664.74	86.9	13.1
13	Povidone Iodine	76,904,103.78	48.6	51.4
14	Azithromycin	64,102,446.34	70.2	29.8
15	Cefotaxime	59,920,428.74	0.0	100.0
16	Others	591,069,385.24	39.7	60.3

5.9. Share of medicines consumption by domestic industries and import through public and private sector

Sixty-five percent of medicines consumption was met through import by public and private sector, public sector shared 9%. Similarly, 35% of medicines consumption was met through domestic industries.

Share of Medicines Consumption Through Import and Domestic Industries



5.10. Common isolates and their sensitivity/ resistance pattern

Table XIII shows the common isolates and their sensitivity/ resistance pattern from urine and blood samples tested between June-August, 2006 in Bir Hospital and T.U. Teaching Hospital.

Table XIII: Sensitivity/ resistant pattern

Urine Sample	TUTH		Bir Hospital	
	Sensitive	Resistant	Sensitive	Resistant
<i>E. coli</i>				
Amoxicillin		DNU		v
Ciprofloxacin	v		v	
Cotrimoxazole	v		DNU	
Cephalexin	v		v	
Nitrofurantoin	v		v	
Norfloxacin		DNU		v
Ceftriaxone		DNU	DNU	
Gentamycin		DNU	DNU	
Ceftazidime	v		DNU	
Nalidixic Acid	v			v
Amikacin	v		DNU	
Ofloxacin	v		v	

* DNU= Disc Not Used or Less than 50% isolates sensitive

Urine Sample	TUTH		Bir Hospital	
	Sensitive	Resistant	Sensitive	Resistant
<i>K. pneumoniae</i>		DNU	DNU	
Amoxicillin		DNU	DNU	
Ciprofloxacin	v		v	
Cotrimoxazole		DNU	DNU	
Cephalexin	v		DNU	
Nitrofurantoin	v		v	
Norfloxacin		DNU	v	
Ceftriaxone		DNU	DNU	
Gentamycin		DNU	DNU	
Ceftazidime	v		DNU	

Urine Sample	TUTH		Bir Hospital	
	Sensitive	Resistant	Sensitive	Resistant
<i>S. aureus</i>		DNU		v
Ampicillin		DNU		v
Ciprofloxacin	v		DNU	
Cotrimoxazole		DNU		v
Cephalexin		DNU	DNU	
Erythromycin		DNU	DNU	
Cloxacillin	v		DNU	
Nitrofurantoin		DNU	v	
Ceftriaxone		DNU	DNU	
Norfloxacin		DNU	v	

Blood Sample	TUTH		Bir Hospital	
	Sensitive	Resistant	Sensitive	Resistant
<i>S. typhi</i>		DNU		
Amoxicillin		DNU	-	-
Ciprofloxacin	v		-	-
Cotrimoxazole		DNU	-	-
Cephalexin	v		-	-
Chloramphenicol	v		-	-
Ceftriaxone	v		-	-
Ceftazidime	v		-	-
Ampicillin	v		-	-
Ofloxacin	v		-	-

- data not collected

Blood Sample	TUTH		Bir Hospital	
	Sensitive	Resistant	Sensitive	Resistant
<i>S paratyphi A</i>				
Amoxycillin		DNU	-	-
Ciprofloxacin	v		-	-
Cotrimoxazole		DNU	-	-
Cephalexin	v		-	-
Chloramphenicol	v		-	-
Ceftriaxone	v		-	-
Caftazidime	v		-	-
Ampicillin	v		-	-
Ofloxacin	v		-	-

Blood Sample	TUTH		Bir Hospital	
	Sensitive	Resistant	Sensitive	Resistant
<i>S aureus</i>				
Ampicillin		DNU	-	-
Ciprofloxacin	v		-	-
Cotrimoxazole		DNU	-	-
Cephalexin	v		-	-
Cloxacillin	v		-	-
Erythromycin	v		-	-
Ceftriaxone	v		-	-
Chloramphenicol	v		-	-

6. RECOMMENDATIONS

- The antibiotics produced in the country shared about 49% of the total consumption of antibiotics. The domestic industries should be encouraged for increasing the production.
- Antibiotics surveillance system should be developed and the prescribers should be informed about the sensitivity pattern.
- Medicines of limited/ doubtful usefulness like vitamins/ cough preparations are among the top 15 selling medicines in the country. Regulatory intervention should be undertaken to rationalize their use.
- The sale of methyl ergometrine seems to be very high. Some measure should be taken to ensure its distribution and sale.

7. CONCLUSION

The study shows the consumption of allopathic drugs in the fiscal year 2062/63 (2005/06) has been Rs. 9 billion 61 million, of which about 30% is shared by antibiotics. Study result for fiscal year 2061/62 (2004/05) showed the consumption to be Rs. 10 billion, 659 million. The study shows the decrease of consumption by 15 percent.

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