

Emerging Exports of Preserved Poultry Products with Special Reference to Egg Products from India

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Abstract: The export of poultry products contributes significantly in India's total export. As far as India's export of poultry products are concerned, exporting of dried eggs and liquid eggs contribute a substantial portion. India has been exporting poultry products such as eggs, preserved or processed egg products, processed poultry meat even live birds to rest of the world. The dried eggs or powdered eggs and preserved liquid eggs are used as nutrient supplement and they are easily available at all seasons. There had been a fluctuating trend in the exports of dried and liquid eggs from India due to health factors associated with the poultry products. The availability of poultry equipment, feed additives, vaccines and pharmaceuticals in India has a good potential for exports.

Keywords: Exports, Poultry Products, Egg Powder, Liquid Egg,

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I. Introduction

Agriculture in India is a prime occupation. The allied activities of agriculture play a significant role in economic development. Among the allied activities of agriculture, poultry sector is one of the fast growing sectors. The growth rate of poultry sector is more than that of the growth rate of crop production. The growth rate of crop production is experienced at 1.5 to 2 per cent per year where as the growth rate of production of eggs and broilers witnessed eight per cent to ten per cent. India is ranked at fifth largest egg producer in the world and 18th largest producer of broilers. The factors such as increasing per capita income of the people, growing urban population and falling tendency of poultry prices attributed to this trend. Emerging vertical integration of poultry production reduces the production cost and marketing costs. This further reduces the cost of poultry products. The commercialization of poultry farms paves ways to establishing more number of poultry farms with various levels which leads to increasing production of poultry products. The export of poultry products substantially contribute in Asia's total export.

Scenario of Poultry Farming in India

Rearing hens in homes in rural areas in India has been practiced for self consumption and for additional revenues. They are mainly as backyard farming and they are free range. People used to rear hens in their backyards in minimum numbers and the surplus production of eggs over their domestic demand was sold in local markets. They also used to rear hens for medicinal and spiritual purposes. Today also people in rural areas practice this type of poultry keeping. This gives supplementary income to the people in addition to their regular incomes. The transformation of backward poultry farms into commercialization started during 1960s in India.

The overall contribution of live stock sector in India's Gross Domestic Products is 4.11 per cent. The poultry population has been increasing rapidly since 1951. There has been a rapid expansion of poultry sector in India due to the technological changes and increasing demand for poultry production. The small scale poultry farms are being converted into large scale units for harvesting the economies of scale benefits. The introduction of improved and genetic materials in the poultry farms are the main reasons for growth of establishing commercial poultry farms (Chatterjee et.al,2015).Poultry production in India has taken a quantum leap in the last 40 years, emerging from unscientific farming practice to commercial production system with the state-of-art technologies (Report of Animal Husbandary,2016-17). Regarding different types of poultry farms, both broiler and layer farming are gaining momentum in India especially in the south India. Layer farming involves in the production of eggs and the broiler sector involves in the production of meat. The layer farms are mainly concentrated in the states such as Andrapradesh, Tamilnadu, Maharastra and Punjab. On account of less variation in the climates, a vast majority of the layer bird farms are located in the southern India. (Gain Report, 2016). Egg production is also expanding in the states of West Bengal, Uttar Pradesh, Bihar and Chhattisgarh.

Since the backyard poultry farms are being converted in to well commercialized, the number of poultry birds in the poultry farms are increasing. The total poultry population in the country is 729.2 million numbers in 2012. (19th Livestock census,) which is 12.39 per cent more than the total poultry population in earlier livestock census.

Table-1 Growth of Poultry Population in India
(In Million Numbers)

Year	Poultry Population	Total Livestock	Percentage	Year	Poultry Population	Total Livestock	Percentage
1956	94.80	306.60	30.92	1987	275.32	445.29	61.83
1961	114.20	335.40	34.04	1992	307.07	470.86	65.21
1966	115.40	344.10	33.54	1997	347.61	485.39	71.61
1972	138.50	353.60	39.17	2003	489.01	485.00	100.83
1977	159.20	369.00	43.14	2007	648.83	529.70	122.49
1982	207.74	419.59	49.51	2012	729.21	512.06	142.41

Source: 19th Livestock Census, Government of India

The increasing growth of poultry population in India right from 1956 is a significant phenomenon in the Indian poultry industry. In the year 1956 the total poultry population was 94.80 million which was stood at 307.07 million in the year 1992. As per the 19th livestock census, the total poultry population was 729.21 million in the 2012. There has been a spectacular increase in the growth of poultry population in India. It was found that total poultry population increases along with the increasing numbers of total livestock in India. It was also found that the percentage contribution of total poultry population in the total livestock witnessed an increasing trend. This is because of the fact that increasing numbers of poultry farms due to increasing demand for poultry products, transformation of conventional agricultural activities in to commercial activities, expansion of existing poultry farms, establishing new poultry farms in various states other than southern states of India, improved research and development in veterinary sciences, availability of modern equipments and government supports. The availability of facilities for collection, processing of eggs, preservation of eggs and marketing of eggs stimulate the farmers to bring more number of birds in their farms (Manjula and Saravanan,2015).

Emerging Exports of Poultry Products

As far as the export of poultry products are concerned, European countries, United States and Asian countries play a crucial role. They are exporting poultry products such as meat, eggs and preserved poultry products. The increasing population, increasing demand for poultry products among the people and increasing standard of living in the developing countries are the main factors that boost up the exports of poultry products. Since poultry products especially eggs provide nutrient supplement to human body, people consume eggs more and per capita consumption of eggs has been increasing year by year. A changing pattern of production system facilitates production of more amounts of poultry products. The industrialization and commercialization of poultry farms provide more output in this sector. The expansion of small poultry farms into large farms also leads to supply of a substantial amount of poultry products. The availability of modern technologies, farm equipments and medicines for hens improve the health status of birds. All these factors help to produce more amounts of poultry products and therefore the international demand for the poultry products are easily met.

The poultry exports from European countries and United States are stagnant since most of the importing countries started their own production of poultry products. The Asian countries have been experiencing the fast growth of poultry production since the last two decades. They export their poultry products after meeting their domestic demand. Similarly African countries enjoy in poultry production due to prevailing favourable climatic conditions. India produces the best quality eggs which are exported to the middle-east countries and Africa. Poultry equipment, feed additives, vaccines and pharmaceuticals have a good potential for exports (APEDA).

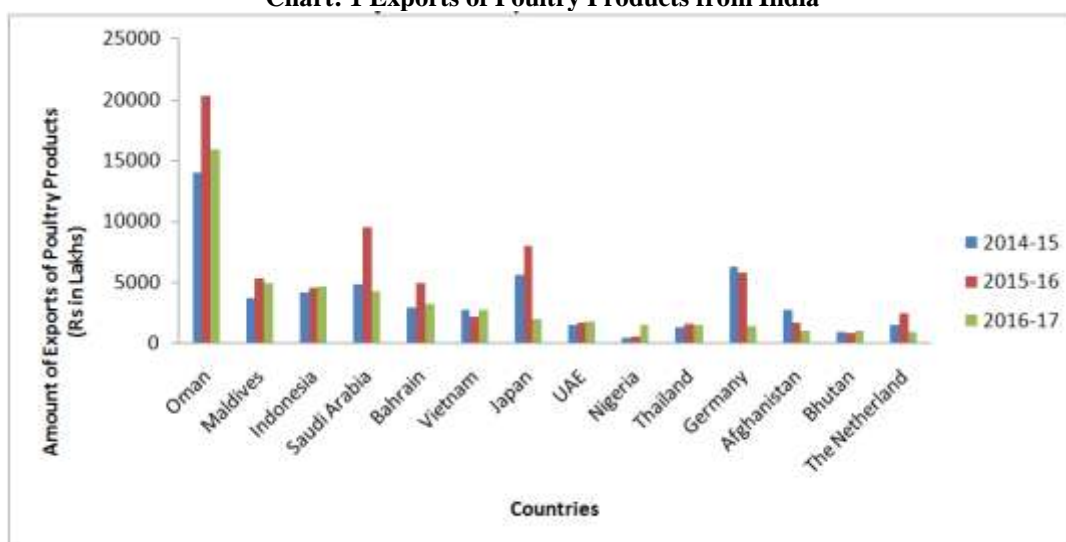
Table -2 Emerging Exports of Poultry Products from India
(Quantity in Metric tonne, value in lakhs)

Country	2014-15		2015-16		2016-17	
	Quantity	Value	Quantity	Value	Quantity	Value
Oman	221224.09	14054.67	300898.18	20384.43	236973.12	15948.67
Maldives	76413.26	3638.45	109548.54	5289.90	112572.18	4920.53
Indonesia	1655.98	4163.88	1397.02	4539.48	1449.01	4570.16
Saudi Arabia	18470.42	4771.65	42087.86	9563.94	4973.66	4190.41
Bahrain	25706.80	2871.16	38353.82	4937.32	28474.68	3131.18
Vietnam	2852.39	2682.76	768.98	2120.00	1633.20	2732.32
Japan	1718.12	5624.96	2539.66	8018.33	629.81	1899.31
UAE	1334.85	1453.49	1522.51	1652.28	3716.36	1728.29
Nigeria	628.36	390.28	132.04	487.87	408.5	1436.89
Thailand	680	1210.73	477.77	1515.45	409.92	1396.36
Germany	2980.37	6266.57	2336.12	5794.46	568	1349.84
Afghanistan	77137.28	2665.61	51085.20	1601.41	26832.96	1008.73
Bhutan	721.75	847.02	690.05	800.94	780.99	945.08
Netherland	848.19	1476.86	875	2441.34	324.12	825.67

Source: Agricultural and Processed Food Products Export Development Authority (APEDA)

India is well known for its poultry production and exports in the world. India is one of the leading exporters of poultry products in the world. India has been exporting poultry products such as eggs, preserved or processed egg products, processed poultry meat even live birds to rest of the world. The main importers of poultry products from India are Oman, Maldives, Indonesia, Saudi Arabia, Bahrain, Vietnam and Afghanistan. But, other countries listed in the table also play a big role in importing poultry products from India. Besides, many other nations import poultry products from India depending upon the demand and other factors such as price and health importance. The European countries import poultry products from India in lesser quantities since they have sound poultry production system and research. On account of out breaking of bird flu and other avian diseases, India witnessed a fluctuating trend in poultry exports. Some importing countries imposed ban on Indian poultry products for a while and they were lifted after the situation comes to normal. However, poultry exports fetch a substantial amount of foreign exchanges to Indian farmers but export volatility during the outbreak of avian diseases is a matter of great concern.

Chart: 1 Exports of Poultry Products from India



Exports of Dried/Powdered eggs

The average protein content of an egg is 14 per cent. It is perfect substitute for milk and other meat items. People now eat egg and preserved egg products due to rising affordability and access to a wide range of egg products (Manjula and Saravanan, 2015). There are three main parts in an egg. They are the shell, the albumen or egg white and the yolk. The shell constitutes 10 per cent of the whole egg and the albumen and the yolk constitute 60 per cent and 30 per cent respectively. The weight and size of younger birds' eggs are relatively lower than that of older ones. Poultry eggs are used to prepare egg powder. The powdered eggs are used in food processing units especially in baking units. The powdered eggs can directly be used in baking units without any dehydration. The powdered eggs can be used for making dishes such as scrambled eggs and omelets after rehydrating the same. The powdered eggs were widely used in the United Kingdom during the Second World War for rationing. The advantages of powdered eggs have a storage life of five years to ten years when stored without oxygen in a cool storage atmosphere. (Wikipedia)

Egg powder is dehydrated eggs that are made by spray drying method. Egg powder is widely used in hospitals, military settlements and hotels. Egg powder is nutritious, full of vitamins and protein natural. On account of antibacterial quality and immune boosting property, egg powder is exported more and its demand has been increasing. (Global industry Analysis and Forecast 2016-2024). Many industrial units involve in preparing egg powder for commercial purpose. The processed and preserved egg products are as follows.

1. Whole egg powder
2. Egg yolk powder
3. Egg albumen powder
4. Preserved liquid Egg

Whole egg powder

The whole egg powder is prepared from the whole egg containing the albumen and yolk without separating them. This type of egg powder is used in the restaurants and other fast food centers. The whole egg powder is used in classical food applications where rising qualities are not important.

Egg yolk powder

The yolk part of the whole egg is separated, dehydrated and prepared into powder form. This kind of yolk egg powder is used as a substitute for fresh egg yolk to obtain colour, texture and emulsion capacity.

Egg albumen powder

The egg albumen is separated from the whole egg and it is put into various processes to make it into powder. The egg albumen powder is used in a range of items from fish, meat and potato preparations in bakery and pastry products.

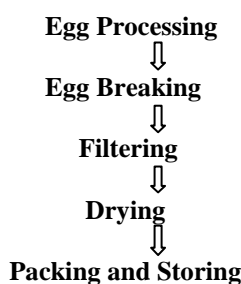
Processed liquid Eggs

The process of preparing the whole egg powder, egg yolk powder and albumen powder are concerned with the dehydration of eggs and the preservation of liquid eggs involve preserving the egg parts in liquid form.

Processes of Drying of Eggs

The dehydration of egg parts starts with the breaking of fresh eggs. After removing the egg-shell, the liquid mixture is filtered and the same is stored at 4°C. After having stored, they are taken to tabular heater, where it is dried at about 65°C for 8 to 10 minutes and with the help of high pressure pump, the dried egg parts are converted into powder form (*Global Summit 2017, Government of Gujarat*).

PROCESS OF DRYING



Exports of Dried Eggs from India

India not only exports raw physical eggs but also exports processed and preserved poultry products. Among the export of processed and preserved poultry products, exports of dried eggs so called powdered eggs and liquid eggs are of great importance. The comparative analysis of export of dried eggs among India, Asian countries and the world are given in table 3.

Table-3 Exports of Dried Eggs from India (In tonnes)

Year	India	Asia	World	Year	India	Asia	World
2000	957	2135	29412	2007	7719	10965	54767
2001	1775	3179	30594	2008	7250	10978	57614
2002	3366	4418	35793	2009	6763	9050	57074
2003	3239	5547	32001	2010	6085	7699	55800
2004	2202	4161	37762	2011	6240	7407	59534
2005	7699	9765	47881	2012*	8766	11254	66028
2006	8725	10754	51469	2016*	10980	13766	78472

Source: Global Poultry Trends, the Poultry Site (*Estimated figures (by authors))

Chart: 2 Exports of Dried Eggs from India

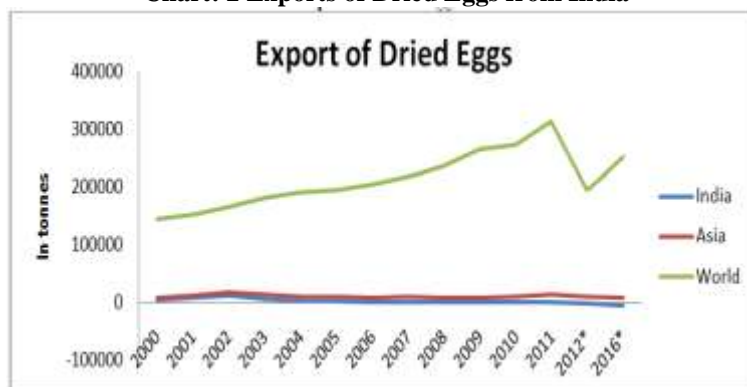


Table: 4 Growth Rates Computation for Exports of Dried Eggs from India

Export from	Periods	Y – Intercept (a)	Average Annual Growth Rate (b)	R-Square
India	2000-2011	1570	553.5	0.551
Asia	2000-2011	3088	628.1	0.499

World	2000-2011	25585	3111.0	0.906
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Source: Estimated by the authors

The table 4 presents the details of exports of dried egg from India from 2000 to 2016. It was 957 tonnes in the year 2000 and it jumped to 8725 tones in the year 2006. This trend lasted up to 2007. Thereafter, there had been a fluctuating trend in the export of dried eggs from India. As far as Asia is concerned, there had also been an increasing trend from 2000 to 2008 and it started to fluctuate and it stood at 7407 tones in 2011. It was found that the exports of dried eggs from India during the years under study was grown by 553.5 tonnes. The estimated amount of exports of dried eggs for the years 2012 and 2016 were positive and upward.

The same trend was witnessed in the case of export of dried eggs in the world. The trend results showed that the average annual growth rates of exports of dried eggs from India, Asia and world were calculated to be positive. The average annual growth rate of exports of dried eggs of world is greater than the Asia and India.

Outbreak of avian influenza often affected the poultry industry in Asian countries. It influenced the production of poultry products and consumption pattern. The trade flows of egg products were severely affected. The years 2007, 2008 and the following years experienced a bitter taste due to avian diseases. Therefore, the exports of poultry products especially egg products were declining during these periods. A substantial amount of poultry birds were culled in this industry (Vijesh. Et.al, 2015). On account of this, the demand for feed ingredients and feed production started to decrease.

Table-5 Exports of Liquid Eggs from India

(In tonnes)

Year	India	Asia	World	Year	India	Asia	World
2000	4539	9219	144191	2007	351	9954	217895
2001	8924	13205	152196	2008	283	9214	235998
2002	12426	18347	165007	2009	523	8987	266442
2003	6969	14290	180897	2010	600	11489	272639
2004	3248	10207	190191	2011	443	13878	313984
2005	1500	10851	194616	2012*	-2288	10293	195234
2006	61	9476	205292	2016*	-5741	9492	251614

Source: Global Poultry Trends, the Poultry Site

*Estimated figures (by authors)

Chart: 3 Exports of Liquid Eggs from India

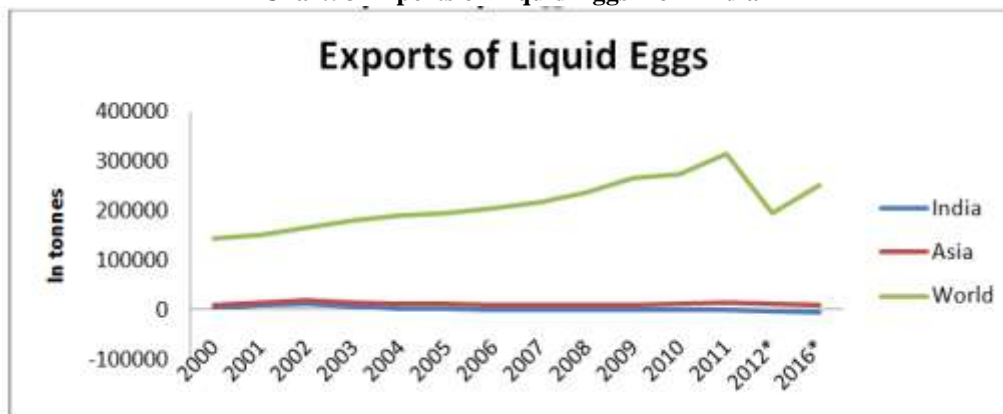


Table: 6 Growth Rates Computation for Exports of Liquid Eggs from India

Export from	Periods	Y – Intercept (a)	Average Annual Growth Rate (b)	R-Square
India	2000-2011	8932	-863.1	0.577
Asia	2000-2011	12894	-200.1	0.064
World	2000-2011	11999	14095	0.952

Source: Estimated by the authors

Table 6 shows the export of liquid eggs from India from 2000 to 2016. It was found that there had been a highly fluctuating trend in the export of liquid eggs. It increased from 4539 tonnes in the year 2000 to 12426 tonnes in the year 2002 and it suddenly decreased to 61 tonnes in 2006. Thereafter there had been ups and downs in the export of liquid eggs from 2007 to 2011. The negative values of exports of liquid eggs were calculated for the years 2012 and 2016 respectively. In the case of Asia, it gradually increased from 2000 to 2002 and it decreased in the year 2006. It was found that there was a huge export in the year 2010 from India and Asia as a whole. Regarding the world export, there had been constant increase in the export of liquid eggs. The trend result proved this. The average annual growth rate of Indian export in this regard was calculated to be

-863.1 tonnes which shows a negative trend. Asia's export also witnessed a negative annual growth rate whereas world's liquid export witnessed positive annual growth rate.

India's poultry industry faced many losses and problems during 2006 to 2009 after the country reported its first outbreak of bird flu. Not only the domestic sales of eggs and sales of other poultry products affected, but also their exports were badly hit. The gulf countries did not take any fresh orders and they were very particular in this regard. They carefully imported poultry products from Asian countries. The egg processing units stopped their egg purchasing from poultry farms and it resulted in reduction of prices of eggs (ANTHRA). The sultanate of Oman was the biggest egg importer from India which imposed a ban on importing eggs and chicken meat from India in 2012. On the line of this, egg exports to Iraq was severely affected due to ban imposed by Kuwait in 2008. (M.K. Ananth, *The Hindu*)

II. Conclusion

The export of agricultural and its allied products from India play a significant role in the world right from the ancient days. The production of poultry products in India attracts many countries in the world. The emerging exports of poultry products from India are gaining export momentum. The increasing demand from foreign countries encourages the domestic market players in India to export more of poultry products. As far as India's export of poultry products are concerned, exporting of dried eggs and liquid eggs contribute a significant portion. There is a greater scope for establishing egg processed units in India, however minimum numbers of export units are looking after this business. There had been a fluctuating trend in the exports of dried and liquid eggs from India due to health factors associated with the poultry products. In order to preserve the poultry products for export purpose, better preservation methods should be developed to export the poultry products that ensure free from any health hazardous. This would boost up more amount of export in future.

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