Journal of Medicinal and Aromatic Plant Sciences 38(1-4) (2016) 1-28

International Trade in Essential Oils and Resinoids: A Case Study of Past 18 Years

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Article History

Received: September 23rd, 2016
Accepted: December 5th, 2016

Key words

Agribusiness
Essential oil
Export
Import
Resins
Trade

ABSTRACT

In the present study, we have analyzed international trade data of essential oils and resinoids (EORs) that belong to HS(ITC) 3301 heading for the period of 1996 to 2013. The trade data were retrieved from COMTRADE database, (UN Statistics Division, New York) and Export Import Data Bank (DGCI&S Kolkata, India). With growing demand of plant based products, trade in essential oils and resinoids (EORs) is also increasing worldwide, reaching to a level of total trade of US$ 7.7b (billion) in 2013 with annual growth rate of 6.9%.The present work gives detailed account of international trade pertaining to specific EORs based commodities, and shall be useful for scientific fraternity, industry and farmers in drawing policy for expanding global trade of these herbal commodities.

INTRODUCTION

Various products like essential oils, cosmetics, personal care products, dietary supplements, dyes and colorants, medicinal products, pesticides etc. are obtained from plants [1,2]. In addition, plant derived products are safe, renewable, affordable and abundant, therefore, triggering huge demand, particularly in developed nations. Several studies reported that world trade in essential oils, for the period of 1990 to 2005, reflected: immense increase with annual growth rate more than 40%, reaching about US$ 4bn by 2005; top destinations include USA (14%), France, UK, Japan, and Germany (in range 4-7%); leading five exporters were USA (17%), France (10%), India (8%), UK (5%) and Brazil (5%) (www.sadc trade.org,Trade Information Brief: Essential Oils). A report submitted to WTO/EIF Support Programme highlighted global trade in MAPs, essential oils for eight year period 2002-2009 [3].

Although these studies give very useful details about global trade in essential oils, but have certain limitations as they are mainly focused on essential oils with no trade information about oleoresins (which are highly traded now-a-days) and reported trade data is old and studies were done for short periods; usually centered on major headings i.e. HS3301. No individual commodity (at six digit level HS numbers)were described. Hence, there is a need of carrying-out detailed study with updated trade data at specific commodity level that can furnish and bring useful information about the current status of global trade in these plant based commodities in public domain. To fulfil this objective, present study was undertaken to provide more comprehensive trade data of EORs for the period 1996 to 2013.

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CIMAP Communication No.: CIMAP/PUB/2016/53
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MATERIALS AND METHODS

The trade data were retrieved from COMTRADE database, (UN Statistics Division, New York) and Export Import Data Bank (DGCI&S Kolkata, India) which compile data in Harmonized Commodity Description and Coding System (HS) classification, adopted by the Customs Co-operation Council (World Customs Organization) since June 1983. Since 1 January 1988, HS convention came into force (Brussels, 1989). According to HS convention, merchandise products are classified to names and unique eight digit numbers: up to 2 digit (1-96) called chapters reflecting major classification; headings, broad commodity groupings within the chaptersare denoted by next two digits; subheadings, the next two digits give account of more specific classification of any commodity within headings; last two digits are left to more specification of particular goods under subheading, and left to the nation states to assign as per their need.The COMTRADE and EIDB keep records up to 6 and 8 digit HS numbers, respectively

In the present study, trade data under the heading HS3301, from 194 countries, were analyzed for the period of past 18 years (1996-2013).Besides, trade data up to 8 digit HS numbers were collected from EIDB for the same heading and period. Total trade were calculated by addition of export and import terms,Quantity is given in ton (t), trade values in million (m) US$ and lakh (L) rupees.Annual growth is computed for total period and last four years using compound interest formula (eq. 1).

$$\text{Growth rate} = (\text{EV}/\text{BV})^{\left(\frac{1}{n}\right)} - 1 \quad \text{eq. 1}$$

Where, EV is Ending value, BV is beginning value, n is number of year

RESULTS AND DISCUSSION

We have analyzed trade in EORs and presented them as per HS system of commodity classification. Items such as essential oils (terpeneless or not), including concretes and absolutes; resinoids; extracted oleoresins; concentrates of essential oils in fats, in fixed oils, in waxes or the like, obtained by enfleurage or maceration; terpenic by-products of the deterpenation of essential oils; aqueous distillates and aqueous solutions of essential oils come under heading HS3301 (HS four digit).Total eight subheadings come under HS3301 which are comprised either individual commodity (essential oils of orange, lemon etc.) or group of commodities classified under other essential oils, resinoids (HS six digit) (Table 1). Further, these group of commodities are more specifically classified as individual entity (HS eight digit) (Table 2). For each commodity/commodity group, total trade is computed by addition of export and import terms. Likewise, annual growth rate is calculated by using compound interest formula for the whole course (i.e. 18 years) as well as for recent trading years.

Essential oils, resinoids and terpenic by-products (HS3301)

According to trade value, total global trade in EORs has increased more than three times during the period 1996 to 2013, from US$ 2.3b to7.7b, and it is growing 6.9% annually (Fig 1).

Export: As per trade value, USA (17.5%), India (11.2), France (10.5%), UK (6.3%), China (5.7%), Brazil (5.6%), Argentina (4.5%), and Indonesia (3.9%) are the major exporting countries of EORs in past 18 years (Table 1). Among them India (15.2%), Argentina (9.1%), China (7.7) and Indonesia (7.6%) are fastest growing exporters. By trade value, India is the largest exporter of EORs since 2011 and in 2013, its export amounted US$ 726m (31,233t), by far ahead from second largest exporter, USA,i.e. US$ 503m (36,077t) in the same year(Fig 2). In term of volume, however, Brazil is the largest exporter with average annual volume of 64,301t valued at US$ 122m. Besides, Its exportation increased by 15.5% in the period 1997-2013, from 59,641t to 68,915twhile corresponding trade value surged to 200.6%, from US$ 68m to 203m in the same period.In the period of 1996-2013, exportation of EORs from USA, India and China have also swelled by 64.2% (from 21,973t valued at US$ 267m to 36,077t to US$ 503m), 697.8% (from 3,915t valued at US$ 57m to 31,233t

Table 1. Top export-import countries of EORs with annual growth rate, percentage of total trade in past 18 years.

SN	Commodity (HS)	E/I	Country	Trade in year (US$ m)		Total trade (1996-2013)		CAGR	
				1996	2013	US$ m	%	1996-2013	2010-2013
1	**Essential oils, resinoids and terpenic by-products (3301)**	E	USA	267	503	6,534	17.5	3.6	3.9
			India	57	726	4,172	11.2	15.2	21.4
			France	162	301	3,924	10.5	3.5	2.1
			UK	96	228	2,360	6.3	4.9	4.6
			China	89	336	2,139	5.7	7.7	15.2
			Brazil	68	203	2,081	5.6	6.7	5.3
			Argentina	38	182	1,682	4.5	9.1	9.3
			Indonesia	33	123	1,453	3.9	7.6	-0.3
		I	USA	254	752	7,611	19.2	6.2	7.1
			France	163	318	3,957	10	3.8	2.7
			UK	151	274	3,423	8.6	3.4	3.0
			Germany	94	283	2,738	6.9	6.3	8.7
			Japan	120	176	2,488	6.3	2.1	3.0
			Switzerland	59	126	1,824	4.6	4.3	-1.8
			China	9	263	1,560	3.9	20.6	21.6
2	**Essential oils of orange (330112)**	E	Brazil	27	104	988	32.7	8.2	8.6
			USA	24	88	821	27.2	7.4	9.47
			Germany	4	23	200	6.6	10	5.12
			UK	7	20	181	6	6	10.22
			Switzerland	4	7	104	3.5	2.5	3.08
			Italy	4	8	94	3.1	4	-1.31
			France	3	4	68	2.3	2.5	-16.23
			Mexico	1	9	65	2.1	12.6	18.64
			Paraguay	5	5	53	1.8	-0.5	0.59
			Ireland	1	6	34	1.1	11	232.07
			Belgium		12	24	0.8	38.6	67.6
		I	USA	27	62	731	23.7	4.7	7.62
			Japan	21	26	371	12	1.4	6.3
			Germany	9	56	293	9.5	10.9	41.03
			UK	9	17	191	6.2	3.6	5.29
			France	9	12	147	4.8	1.4	-0.64
			Ireland	6	12	139	4.5	4.4	4.05
			Switzerland	6	11	137	4.4	3.4	10.61
			China		18	137	4.4	22.7	11.58
			Netherlands	5	6	106	3.5	1.6	11.79
			Canada	3	11	104	3.4	7.2	15.5
3	**Essential oils of lemon (330113)**	E	Argentina	33	175	1,585	40.9	9.7	9.3
			Italy	24	38	437	11.3	2.5	-3.0
			USA	15	29	409	10.6	3.8	-2.2
			UK	8	25	258	6.7	6.4	-12.9
			Mexico	3	14	198	5.1	8.1	-6.6
			Switzerland	6	15	145	3.7	5.2	4.5
			Germany	2	17	122	3.1	11.7	1.8
			Spain	4	9	93	2.4	5.1	-1.5
			China		45	52	1.3	29.1	239.0
			Ireland	9	5	39	1	-3.2	104.5
		I	USA	31	123	1,172	30	7.9	5.1
			UK	26	26	546	14	-0.1	-16.1
			Ireland	7	91	369	9.4	15.2	63.7
			Japan	12	21	325	8.3	2.8	-7.5
			China	1	31	275	7	23.7	3.7
			France	8	9	190	4.9	0.8	-14.9
			Switzerland	5	12	163	4.2	4.7	-9.6
			Germany	4	10	123	3.2	5.2	-6.5
			Brazil	1	5	99	2.5	8.2	-6.9
			Mexico	1	8	92	2.3	9.6	1.2

4	**Essential oils of citrus fruits, n.e.s. (330119)**	E	USA	24	54	593	23.6	4.6	9.7
			Italy	9	49	381	15.2	10.1	5.3
			Mexico	6	60	305	12.1	13.2	15.9
			UK	5	26	218	8.7	9.8	7.6
			Germany	4	12	148	5.9	5.7	-3.5
			Israel	7	3	143	5.7	-4.1	21.6
			Brazil	4	12	92	3.7	5.7	-2.4
			India	1	8	69	2.8	15.9	9.2
			Egypt	6	13	66	2.6	13.2	-2.0
			Canada		3	26	1	17.4	18.5
			Australia	1		21	0.8	-6.6	-2.3
			Paraguay			15	0.6	-18.2	-50.8
		I	USA	11	78	573	21.6	11.5	7.3
			Japan	18	20	352	13.3	0.4	11.6
			UK	5	28	205	7.7	10.2	10.7
			France	4	22	181	6.8	9.8	1.5
			Germany	5	14	156	5.9	6.3	0.9
			Switzerland	5	9	136	5.1	2.7	-4.0
			Ireland	4	17	107	4	8.8	34.9
			Netherlands	5	8	80	3	2	9.5
			Mexico	7	7	72	2.7	0.4	6.7
			Brazil	1	4	49	1.8	11	-3.3
5	**Essential oils of peppermint (330124)**	E	USA	68	96	1,511	48.7	1.9	2.8
			India	31	98	766	24.7	6.7	26.5
			Thailand	31		167	5.4	-32.8	3.5
			UK	8	9	139	4.5	0.3	5.9
			Singapore	7	1	127	4.1	-11.7	-39.5
			HKG	13	3	103	3.3	-8.2	76.7
			France	5	6	85	2.7	1.4	9.4
			Germany	2	10	69	2.2	8.1	17.8
		I	UK	27	21	441	14.9	-1.5	-3.9
			HKG	25	13	282	9.5	-3.7	22.5
			Germany	10	24	201	6.8	5.1	12.6
			USA	8	15	200	6.8	4	8.6
			Japan	7	12	183	6.2	2.6	0.7
			Singapore	4	4	172	5.8	-0.3	-31.9
			Mexico	7	4	155	5.2	-3.1	1.6
			France	13	10	150	5.1	-1.4	12.1
			Belgium	9	4	124	4.2	-4.5	-12.3
			Thailand	2	6	94	3.2	5.7	16.6
			China		17	86	2.9	43.7	14.1
			Indonesia	2	13	48	1.6	10.3	51.5
6	**Essential oils of other mints (330125)**	E	India	7	287	1,051	38.5	22.7	48.7
			USA	56	55	844	30.9	-0.1	7.7
			China	24	24	208	7.6	0	8.7
			Singapore		37	113	4.1	34	37.7
			UK	4	6	101	3.7	2.8	-1.7
			Canada	2	11	82	3	9.1	13.6
			France	4	8	71	2.6	3.9	14.1
			Paraguay		5	57	2.1	16.9	4.8
			Argentina	2		19	0.7	-21.6	-13.5
			Indonesia		1	20	0.7	23	-45.3
		I	USA	12	94	659	21.3	11.9	10.6
			China	4	126	512	16.6	20.9	61.1
			UK	8	21	244	7.9	5.5	5.0
			Japan	17	20	233	7.5	1	6.6
			Germany	4	30	203	6.6	12.5	14.4
			Brazil	14	21	199	6.4	2.4	14.6
			Mexico	5	10	137	4.4	3.7	3.0
			Singapore	1	43	111	3.6	27.4	77.7

7	**Essential oils, n.e.s. (330129)**	E	France	95	249	2,681	20.8	5.5	5.4
			China	57	212	1,626	12.6	7.6	7.0
			Indonesia	31	68	1,035	8	4.5	-12.3
			USA	31	105	1,005	7.8	7	2.9
			UK	24	91	696	5.4	7.6	9.7
			Spain	15	75	593	4.6	9.3	12.4
			Singapore	12	38	535	4.1	7.1	-4.7
			Switzerland	10	28	427	3.3	6.1	-8.3
		I	USA	95	279	2,918	19.1	6.2	6.7
			France	64	218	2,172	14.2	7.1	5.3
			Germany	41	114	1,238	8.1	5.8	2.8
			UK	46	113	1,206	7.9	5.1	7.2
			Switzerland	27	69	997	6.5	5.4	-3.2
			Spain	20	67	702	4.6	7	2.8
			Japan	30	47	647	4.2	2.6	0.4
			India	5	64	423	2.8	15.8	7.8
			Indonesia	3	92	225	1.5	21	41.5
8	**Resinoids (330130)**	E	USA	10	18	452	43.9	3.2	-13.4
			France	8	7	160	15.5	-1.3	-4.8
			China	1	37	75	7.3	25.6	99.5
			India		9	56	5.4	18.5	16.6
			UK	3	4	53	5.1	2.8	-1.1
			Spain	2	2	51	5	-1.4	-7.8
			Germany	2	6	51	5	6.1	5.5
			HKG	2	1	30	3	-4.9	7.4
		I	Canada	4	5	77	9.2	2.2	9.2
			USA	4	6	72	8.6	2.2	10.5
			UK	4	5	57	6.7	0.8	20.5
			Germany	4	2	50	5.9	-4.1	-4.8
			HKG	2	2	46	5.5	-1	0.7
			France	5	2	42	5	-4.6	13.9
			Netherlands	3	2	40	4.7	-3.5	-4.2
			Singapore	1	4	37	4.4	8.8	-1.3
			Saudi Arabia		7	36	4.2	26.7	15.6
			Japan	3	1	33	4	-5.7	-9.6
			India	1	4	29	3.5	10.2	10.2
			KOR	8		27	3.2	-17.3	15.0
			Spain	1	1	25	3	3.8	-15.5
9	**Essential oils, terpenic by-products etc., n.e.s. (330190)**	E	India	4	263	1,731	26.3	25.7	8.8
			Brazil	25	79	802	12.2	7.1	6.2
			USA	29	59	760	11.6	4.1	4.5
			UK	26	47	536	8.1	3.2	8.8
			France	13	17	367	5.6	1.4	-12.4
			Germany	3	27	250	3.8	13.1	4.9
			Australia	4	22	166	2.5	9.7	-1.5
			Indonesia		54	124	1.9	38.6	165.3
			Ireland	4	3	66	1	-1.6	-29.0
		I	USA	27	94	891	14.7	7.2	7.2
			France	34	36	678	11.2	0.4	-2.6
			Germany	10	33	375	6.2	6.9	6.8
			UK	8	44	342	5.7	10.1	10.1
			Japan	6	29	284	4.7	9.2	9.7
			India	1	49	223	3.7	21.7	10.9
			Ireland	3	2	192	3.2	-1.9	-26.2

Table 2. List of EORs with trade in 2013-14, average of trade value and quantity, last four year- and overall growth rate (For detail please see Suppl. Table 2).

SN	HS(ITC)	E/I		Trade in 2013-14	Average	CAGR (2010-11 to 2013-14) %	Overall CAGR %
1	33011200	E	V	153.9	43.4	-6	27.4
			T	76.6	15.6	-0.7	31.2
		I	V	4638.9	1899.9	21.9	15.5
			T	2155.9	1152.7	10.2	9.7
2	33011300	E	V	404.2	91.3	26.2	35.5
			T	93.9	20.4	49.3	37.9
		I	V	2028.8	698.7	8.1	18.8
			T	122.2	76.3	-0.2	8.1
3	33011902	E	V	114.1	98.8	-14.2	21.9
			T	9.4	27.9	-39.6	21.6
		I	V	745.5	266.4	8.5	18
			T	69.1	74.5	-11.4	6.8
4	33012201	E	V	-	1000.6	-100	8.8
			T	-	5.3	-100	3.7
		I	V	-	4.6	-	-
			T	-	2.5	-	-
5	33012400	E	V	53417.1	18297.7	29.1	14
			T	3790.5	2620.3	18.2	7.6
		I	V	620	384.8	15.1	6.2
			T	21.5	30.5	0.5	-1.5
6	33012510	E	V	5693.6	1938.6	44.3	13.8
			T	369.6	208.1	34.2	8.8
		I	V	179.7	141.8	8.5	9.3
			T	6.5	10	-4.6	-3.8
7	33012520	E	V	-	28.7	-100	-4.7
			T	-	4.1	-100	-13.1
		I	V	0.4	1.3	-4.5	-
			T	0	0.1	-9.6	-
8	33012540	E	V	39.4	336.9	4.5	6.5
			T	1.5	63	8.3	-0.6
		I	V	34.2	87.8	26.6	-4.7
			T	1	17.5	13.2	-14.4
9	33012911	E	V	288	120	46.1	9.6
			T	36.1	24.3	67.5	7.4
		I	V	649.6	367.9	23	35.3
			T	67.9	65.5	68	33.2
10	33012912	E	V	16.2	23.4	348.3	22.1
			T	1.9	3	-	15.7
		I	V	-	6.9	-	-13.9
			T	-	1.2	-	-25.7
11	33012913	E	V	0	5.5	-100	-20.4
			T	0	0.4	-100	-17.8
		I	V	17.4	7.4	2	29.3
			T	0.5	0.4	-6.1	24.5
12	33012914	E	V	16.2	31.8	-19.8	26.4
			T	0.5	8.6	-29.9	-
		I	V	23.6	19.5	-24.8	11.5
			T	0.9	3	-43.2	-2.1

13	**33012915**	E	V	8.8	23	-40.6	4.5
			T	0.2	1.2	-46.5	-6.1
		I	V	77.4	24.7	61.4	22.9
			T	2.9	2.3	30.7	20.6
14	**33012916**	E	V	82.2	32.7	31.4	28.2
			T	8.5	5	1.5	20.4
		I	V	818.8	141.4	58.6	30.6
			T	57.8	15.6	44.5	19.3
15	**33012918**	E	V	44	44.3	-25	27
			T	3.5	4.7	-30.3	23.3
		I	V	526.2	111	15.1	29
			T	59.9	18.7	7.1	22.7
16	**33012917**	E	V	46.9	16.7	2	28.3
			T	2.7	1.4	-1.9	20
		I	V	95	19.1	14.3	21.6
			T	0.9	0.8	21.3	2.8
17	**33012921**	E	V	191.5	157.1	-12.9	4.6
			T	29.1	14.7	-13.5	30.5
		I	V	4053.2	917.5	27	58.4
			T	552.1	251.6	17	60.4
18	**33012922**	E	V	261.8	229.3	36.2	15.3
			T	9.3	16.1	34.2	6.8
		I	V	487.2	119	30.5	17.4
			T	11.1	6.6	-10.3	4
19	**33012923**	E	V	34	49.3	23.5	-2.2
			T	1.5	6.3	30.5	-9.2
		I	V	170.1	61.5	19.2	22.6
			T	3.8	2.4	0.1	17.2
20	**33012924**	E	V	273.1	142.5	-2	23.8
			T	37.5	31.5	-8.3	17.7
		I	V	5064.1	1543.3	15.3	14.8
			T	818.3	390.6	5.3	9.6
21	**33012925**	E	V	68.4	444.8	19.4	-9.5
			T	3.5	25.1	-4.1	-12.1
		I	V	6.1	47.7	3.8	-17.1
			T	0.3	2	29.4	-14.6
22	**33012926**	E	V	1802.4	667.2	6.1	43.7
			T	26.2	26.7	4.1	21.2
		I	V	38.7	48.9	-40.7	-2
			T	0.9	4.3	-42.1	-11.6
23	**33012927**	E	V	8.6	361.9	32.6	-21.4
			T	0.3	3.1	12.7	-15.1
		I	V	-	7	-	-9.6
			T	-	0.8	-	-17.1
24	**33012928**	E	V	295.8	115.2	14.3	23.6
			T	8	10.5	-4.1	17.2
		I	V	65.3	86.2	-12.8	4.6
			T	2.7	12.1	-21	-8
25	**33012931**	E	V	447	226.4	4.1	43.6
			T	0.4	0.9	-14.1	6.1
		I	V	164.1	28.2	595.8	68.2
			T	1.6	3.4	-	37.3
26	**33012932**	E	V	3009.4	921.1	19.2	15.3
			T	68.3	51.4	1.4	1.7
		I	V	790.9	158	17.3	34.3
			T	12.4	7.2	-6.1	13.7

27	**33012933**	E	V	1104.8	414.8	14.5	27.5
			T	52.1	28.8	8.9	16.1
		I	V	0	10.2	-76.3	-26.8
			T	0	2.6	-100	-100
28	**33012934**	E	V	2104.1	544.9	124.4	21.7
			T	60.7	13.2	125.4	27.7
		I	V	8720.9	3693	12.7	63.9
			T	273	215.7	1.6	59
29	**33012935**	E	V	6860.2	2073.4	21.3	35.1
			T	94.4	63.7	-4.9	23.3
		I	V	100.5	136.9	-8.2	23.8
			T	1.4	2.6	-24.1	10.2
30	**33012936**	E	V	0.3	118.1	-71.4	-31.6
			T	0	129.6	-75.5	-46.2
		I	V	157.5	58.7	22.2	32.3
			T	8.1	6.7	5.2	17.8
31	**33012937**	E	V	56.3	292.1	22	-2.9
			T	0.4	6.9	-33.4	-16.8
		I	V	9865.1	1848.8	24.6	46.4
			T	34.4	18.2	6.1	22
32	**33012941**	E	V	390.8	59.8	36.5	29.6
			T	7.9	5.1	-9.7	24.7
		I	V	250.4	52.3	35.1	36.1
			T	4.9	2.1	17.2	34.9
33	**33012942**	E	V	1639.3	471.8	20.3	25.6
			T	182.7	73.2	9.4	22.9
		I	V	7.5	31.2	10.3	11.8
			T	0.3	0.5	3.2	1.8
34	**33012943**	E	V	8.8	6.6	27.2	25.4
			T	0.5	0.5	15.3	14
		I	V	142.1	37.3	35.6	28
			T	2.6	2.3	19.3	9
35	**33012944**	E	V	994	417.9	15.1	41.3
			T	5	3.1	8.5	17.5
		I	V	-	9.6	-100	-
			T	-	1.7	-	-
36	**33012945**	E	V	258.7	75.9	24.6	70.3
			T	8.9	2.6	33.4	-
		I	V	9.4	15.1	-20.3	3.8
			T	0.1	2.5	-60.3	-11
37	**33012946**	E	V	760.3	307.2	2.6	29.8
			T	23.3	16.6	0.7	20.6
		I	V	8.4	5.6	11.9	-4.8
			T	2	0.6	97.8	6.6
38	**33012947**	E	V	712.8	182	10.7	32.8
			T	56.9	17.6	2.5	39.9
		I	V	576.7	181.9	29.8	-
			T	15.8	7.7	17.1	-
39	**33012948**	E	V	89.4	235.3	-5.7	-18.5
			T	3.3	29.3	-19.2	-27.7
		I	V	-	198.6	-	-
			T	-	27.9	-	-
40	**33012949**	E	V	118	521.3	-25.8	-14.5
			T	3.9	223	-14.2	-23
		I	V	2.1	405.7	-	-27.2
			T	0.1	110.9	-	-35.8

41	**. 33012950**	E	V	2805.4	1554.7	-7.4	33.1
			T	115.6	75.3	0.8	15.3
		I	V	246.1	135.8	19.4	21
			T	2.7	6.6	6.4	2.5
42	**33013010**	E	V	78.5	71.6	117.8	19.8
			T	4.7	8.9	28.5	32.4
		I	V	15.3	44.6	26.1	15.5
			T	0.2	6.1	56.5	6.3
43	**33013091**	E	V	1585.8	798.1	8.1	26.8
			T	334.8	189.6	-6.7	32.9
		I	V	1325.5	444.8	36.8	48.6
			T	31.5	17.5	14.9	27.7
44	**33013099**	E	V	3312	1556.6	17.5	31.3
			T	145.3	196.1	-7.9	6.7
		I	V	1134.9	701.5	2.1	14.9
			T	77.7	77.3	-12	10
45	**33019031**	E	V	5155.2	1887.1	1.1	9.5
			T	157.6	139.1	3.6	5.6
		I	V	0.7	49.8	1.9	-5.9
			T	0.1	10.1	-33.8	-8.1
46	**33019033**	E	V	3042.5	571.4	55.9	18.2
			T	17.3	15.8	8.4	13.4
		I	V	8.8	15.6	-20.3	-3
			T	0.1	5.1	-70.7	-21.8
47	**33019011**	E	V	1051.7	345.4	-0.4	24.2
			T	82.3	37.8	8.3	11.5
		I	V	41.9	32.4	44.2	18
			T	1	9.5	0.7	-1.5
48	**33019012**	E	V	3550.9	2154.7	0.6	18.9
			T	185.2	142.9	-1.1	13.3
		I	V	85.4	23.4	-11.7	32.2
			T	3	1.4	-16.2	17.8
49	**33019013**	E	V	26675	11280.5	20	12.4
			T	1272.7	1010.7	-0.6	5.1
		I	V	1326.8	114.2	112	22.6
			T	77	10.1	96.8	20.8
50	**33019014**	E	V	14364.2	5189.1	2.6	16.9
			T	472.6	303.6	0.3	6.4
		I	V	68.4	103.1	-51	44.9
			T	1	2.1	-50.8	23.9
51	**33019015**	E	V	745.1	332.7	-15.5	10
			T	14.7	7.1	0.3	3
		I	V	3.4	8	-48.8	-
			T	0	0.6	-64.8	-
52	**33019016**	E	V	1328.3	640.3	10.4	7.4
			T	246.8	201.2	3.6	2.8
		I	V	-	0.9	-	-
			T	-	0.1	-	-
53	**33019017**	E	V	5064.2	2332.3	7.9	34.7
			T	237.9	203.9	-4.1	21.2
		I	V	41.3	19.9	9.8	21.8
			T	7.4	1.9	38	30.6
54	**33019021**	E	V	424.4	138.6	33.8	19.5
			T	12.1	8.8	11.2	11.6
		I	V	1	26.5	-43.8	-23.8
			T	0.2	6.4	-20.1	-23.1

55	**33019022**	E	V	33264.4	13380.9	17.8	29.5
			T	2420.2	1410.2	7.5	18.7
		I	V	448.6	114.5	40.3	18.1
			T	36.9	15.9	40	13.7
56	**33019023**	E	V	619.7	257.3	19.8	38.3
			T	68.5	29	17.6	38.5
		I	V	10.9	38.6	2.7	45.3
			T	0.2	2.7	-38.6	33.5
57	**33019024**	E	V	443.8	339.1	0.4	18.3
			T	36.4	24.2	4.3	17.3
		I	V	-	3.1	-	-
			T	-	0.1	-	-
58	**33019025**	E	V	105.1	81.6	10.3	-10.9
			T	12.7	8.7	10.3	-9.6
		I	V	-		-	-
			T	-		-	-
59	**33019029**	E	V	46290.3	16110.9	13.8	22.5
			T	4700.1	1758.2	12.2	20.6
		I	V	26829.6	7246.8	27.1	80.1
			T	1582.1	482.1	22.2	34.1
60	**33019032**	E	V	2179.1	1189.5	17.3	14.7
			T	34.9	25	4.3	16.9
		I	V	14.9	93.8	-	12.6
			T	3.2	2.1	-	11.6
61	**33019041**	E	V	204.8	219.1	47.7	-9.2
			T	64.3	31.4	89.4	8.2
		I	V	63.8	48.8	-10.9	19.6
			T	9.1	7.3	-9.9	21.2
62	**33019049**	E	V	176.7	806.2	-18.7	-3.8
			T	21.7	79.7	2.1	-6.8
		I	V	634.9	233	11.5	55.6
			T	149.6	54.6	7.7	52.2
63	**33019051**	E	V	80.4	305.1	3.6	-3.3
			T	0.5	43.4	-38.4	-24
		I	V	14.2	10.7	129.6	13.2
			T	0.7	0.9	119.8	-3.2
64	**33019059**	E	V	651.7	282.1	22.3	18.6
			T	37.1	39.3	65	11.3
		I	V	148	148.3	13.6	15.8
			T	74.5	82.2	-9.1	11.6
65	**33019060**	E	V	32.3	27.5	21	33.3
			T	18	9.7	116.5	61.9
		I	V	112	15.8	-	30.2
			T	14.2	2.3	-	48.3
66	**33019071**	E	V	38.1	76.4	-12.1	10.1
			T	6.7	24	-7.6	11.4
		I	V	78.6	16.8	166	21.4
			T	12.3	3.6	398.1	28.2
67	**33019079**	E	V	32.7	141.4	-23.8	-1.7
			T	6.1	24.8	-4.6	-7.5
		I	V	162.6	95.2	38.2	14.7
			T	16.2	10.6	24.1	17.9
68	**33019090**	E	V	2820.7	2208.7	-12.8	20.7
			T	219.3	256.1	-20.2	14.6
		I	V	2322.9	1556.5	6.1	16.6
			T	256.5	207.6	-4.2	13.2

to US$ 726m) and 86.8% (from 12,796t valued at US$ 89m to 23,899t to US$ 336m), respectively.Meanwhile, UK and Argentina also registered increase in export by 35.5% (from 6,795 valued at US$ 96m to 9,203t to US$ 228m) and 265.2% (from 2,118t valued at US$ 38m to 7,734t to US$ 182m), respectively. In contrast, exportation from France and Indonesia has lessened by 29.4% (from 7,132t to 5,038t) and 7.2% (from 4,696 to 4,358t) but corresponding trade value increased by 85.3% (from US$ 162m to US$ 301m)and 274.7% (from US$ 33m to US$ 123m), respectively in the same period.

Import: According to trade value, USA is the largest importer accounting for 19.2% of the total import of EORs followed by France (10%), UK (8.6%), Japan (6.3%), Germany (6.9%), Switzerland (4.6%) and China (3.9%) in the studied years (Table 1). Among them, fastest growing countries are China (20.6%), Germany (6.3%), and USA (6.2%) (Fig 3). Since 1996, importation of EORs to USA has increased by 134.1%, from 19,643t valued at US$ 254m to 45, 989t valued at US$ 752m in 2013 with on average annual imported quantity of 32,960t.Likewise, importation to UK, Germany and Switzerland has also increased by 14.9% (from 12,862t valued at US$ 151m to 14,775t to valued US$ 274m), 139.6% (from 8,036t valued at US$ 94m to 19,255t valued at US$ 726m) and 30% (from 3,671t valued at US$ 59m to 4,774t valued at US$ 126m), respectively. Notably, EORs importation to China has surged by 894.1%, from 1,419t to 14,109t with corresponding trade value increased by 2828.9%, from US$ 9m to 263m, in past 18 years. In contrast, France and Japan's importation has declined by 9.6% (from 9,494t to 8,585t) and 35.5% (from 19,417t to 12,520t) while corresponding trade value has increased by 95.6% (from US$ 163m to US$ 318m) and 46.5 (from US$ 120m to US$ 176m), respectively in the same period.

Essential oils of orange (HS330112)

Since 1996, total international trade in orange essential oil has increased about four times, from US$ 169m to 644m in 2013 with annual growth rate of 7.7%, and since last four years it is growing by 10.5%annually (Fig. 1).

Export: By trade value, Brazil is the largest exporter of orange essential oil accounting 32.7% of the total world export followed by USA (27.2%) Germany (6.6%) and UK (6%) in the past 18 years (Fig 4). Since 1996, its exportation from Brazil has increased by 20%, from 25,771t to 30,926t in2013 while corresponding trade value surged by 284.3%, from US$ 27m to 104m in the same period. Similarly, The USA, second largest exporter of orange essential oil after Brazil, has also registered enhancement by 151.8%, from 4,870t valued at US$ 24m to 12,265t valued at US$ 88m. Likewise, exportation from Germany, UK and Mexico have also increased by 315.6% (from 734t valued at US$ 27m to 3,052t valued at US$ 23m),50.4% (from 868t valued at US$ 7m to 1,306t valued at US$ 20m)and 582.1% (from 513t valued at US$ 1m to 3,501t valued at US$ 9m), respectively,in the period of 1996 to 1997. Besides, significant orange essential oil exportation has also been observed from Switzerland, Italy, Ireland, Paraguay, France and Belgium with average annual exported quantity of 203t, 919t, 98t, 166t, 288t and 569t, respectively.

Import: As per trade value, USA is the largest importer of orange essential oil accounting 23.7%of the total import in past 18 years followed by Japan (12%), Germany (9.5%), UK (6.2%), France (4.8%), Ireland (4.5%), Switzerland and China (4.4% each) (Fig 5). In this period, importation to USA has been doubled, from 6,729t to 15,169t while corresponding trade value increased around five fold, from US$ 27m to 62m. Similarly, orange essential oil importation to UK, Germany, Ireland, Canada, Switzerland and China has increased by 41.1% (from 2,732t valued at US$ 9m to 3,856t valued at US$ 17m), 462.4% (from 1,972t valued at US$ 9m to 11,091t valued at US$ 56m), 122.3% (from 525t valued at US$ 6m to 1,168t valued at US$ 12m), 155.9% (from 1,356t valued at US$ 3m to 3,470t valued at US$ 11m), 1.4% (from 1,299t valued at US$ 6m to 1,317t valued at US$ 11m) and 2380.6 (from 128t valued at US$ 0.5m to 3,163t valued at US$ 18m), respectively. In contrast, importation to Japan, France and Netherlands have decreased by 37.6% (from 14,627t to 9,129t), 45.6% (from

2,753t to 1,498) and 33.3% (from 1,237t to 825t), but corresponding trade value risen by 27.4% (from US$ 21m to US$ 26m), 29.4% (from US$ 9m to US$ 12m) and 34% (from US$ 5m to US$ 6m), respectively in the period of 1996-2013.

Essential oils of lemon (HS330113)

In past 18 years, total global trade in lemon essential oil has tripled, from US$ 222m to 796m (Fig 1). Since last four years, its trade is growing by 3.8% annually.

Export: In term of trade value, Argentina is the leading exporter of lemon essential oil accounting 40.9% of the total export in past 18 years with CAGR of 9.7% (Fig 6).Thereafter, Italy and USA come which have 11.3% and 10.6% share, with CAGR of 2.5% and 3.8%, respectively. Other major export countries include UK (6.7%), Mexico (5.1%), Switzerland (3.7%), Germany (3.1%), and Ireland, China and Spain (1-2.4%).Exportation of lemon essential oil from Argentina has increased about four times, from 1,736t valued at US$ 33m to 6,352t valued at US$ 175m in the period of 1996-2013.In 2013, China became second largest exporter of lemon essential oil after Argentina with exported volume of 3,341t valued at US$ 45m. In past 18 years, average annual export of this commodity from Italy and USA is roughly similar i.e. 1,329t valued at US$ 24m and 1365t valued at US$ 23m, respectively but in past few years former has taken lead over later. Besides, lemon essential oil exportation from UK, Mexico, Spain, Switzerland and Germany have increased by 121.8% (from 365t valued at US$ 8m to 855t valued at US$ 25m), 224.7% (from 333t valued at US$ 3m to 1,082t valued at US$ 14m), 214.4% (from 179t valued at US$ 4m to 563t valued at US$ 9m), 77.6% (from 59t valued at US$ 6m to 105t valued at US$ 15m) and 379.1% (from 116t valued at US$ 2m to 555t valued at US$ 17m), respectively while Ireland's export has declined by 93.7% (from 485t valued at US$ 9m to 31t valued at US$ 5m) in the period of 1996 to2013.

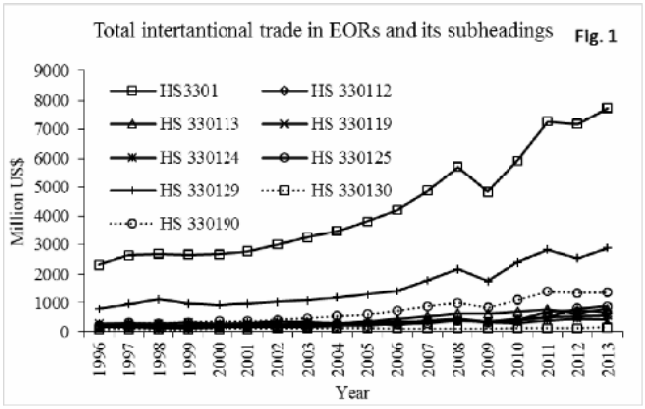
Import: The USA is the biggest destination of lemon essential oil, and its import has increased around three times, from 1,689t valued at US$ 31m to 4,799t valued at US$ 123m in the period of 1996-2013 (Fig 7). In past few years, its importation to Ireland has surged reaching 2,813t valued at US$ 91m in 2013, from 484t valued at US$ 7m in 1996. Notably, importation of lemon essential oil to China was high (highest in 2005: 2262t) in the last decade, but declined in subsequent years and 871t recorded in 2013. Its importation to Switzerland, Germany, Mexico and Brazil have also increased by 88.8% (from 219t valued at US$ 5m to 413t valued at US$ 12m), 156.5% (from 176t valued at US$ 4m to 452t valued at US$ 10m), 76.7% (from 161t valued at US$ 1m to 284t valued at US$ 8m) and 304.2% (from 56t valued at US$ 1m to 224t valued at US$ 5m), respectively while importation to UK has declined by 15%, from 1,310t valued at US$ 26m to 1,114t valued US$ 26m in the period of 1996-2013.

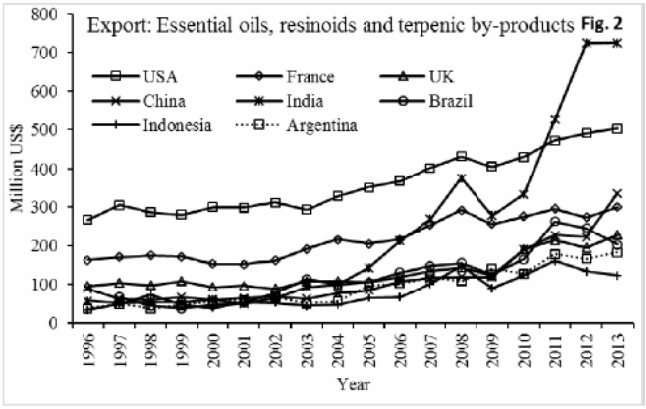
Essential oils of citrus fruits, n.e.s. (HS330119)

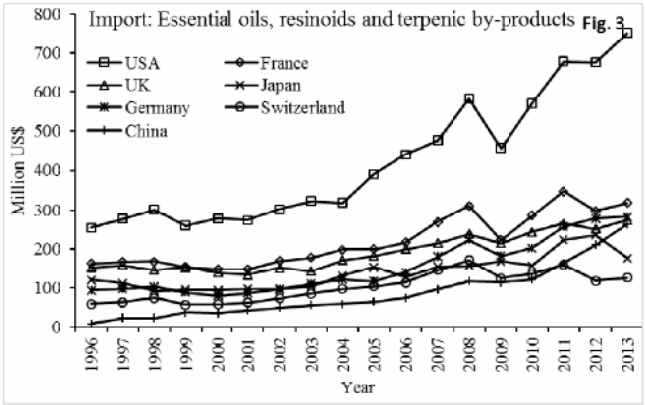
Since 1996, total international trade in essential oils of other citrus fruits have increased fourfold, from US$ 144m to 577m in 2013, and it is growing by 8% annually (Fig 1).

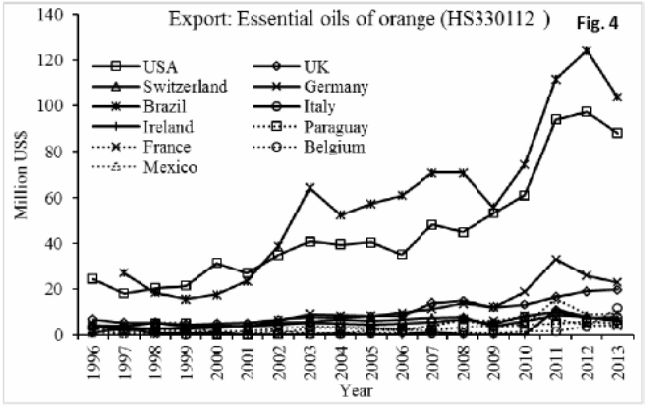
Export: On average annual exportation of essential oils of other citrus fruits in past 18 years, USA leads with 1,721t valued at US$ 33m, followed by Mexico (1,162t valued at US$ 17m), Egypt (584t valued at US$ 11 in 2008-2013), Italy (419t valued at US$ 21m) and UK (414t valued at US$ 12m) (Fig 8). Since 2011, Mexico became largest exporter of this commodity, reaching up to 2,465t valued at US$ 60m in 2013. Thereafter, USA, Italy and UK comes, from where exportation have increased by 47% (from 1,427t valued at US$ 24m to 2,097t valued at US$ 54m), 375.3% (from 176t valued at US$ 1m to 838t valued at US$ 49m) and (from 134t valued at US$ 5m to 877t valued at US$ 26m), respectively in the period of 1996 to 2013. Other major exporters of essential oils of other citrus fruits are Germany, Brazil and India with CAGR of 4.4% (from 131t valued at US$ 4m to 287t valued at US$ 12m), 3% (from 160t valued at US$ 4m to 264t valued at US$ 12m) and 7.9% (from 74t valued at US$ 1m to 288t valued at US$ 8m) in the same period. Notably, its exportation from Egypt has declined hugely, from 2,325t to 182t in the period of

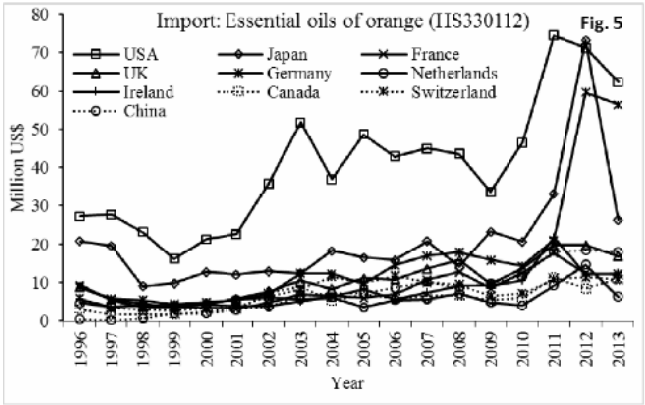
Figure: Fig 1-19 depicts global trade in EORs and Fig. 20-39 illustrate India's export-import of the same.

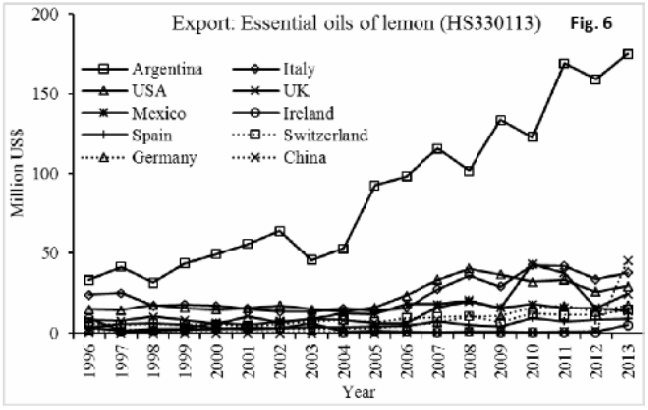


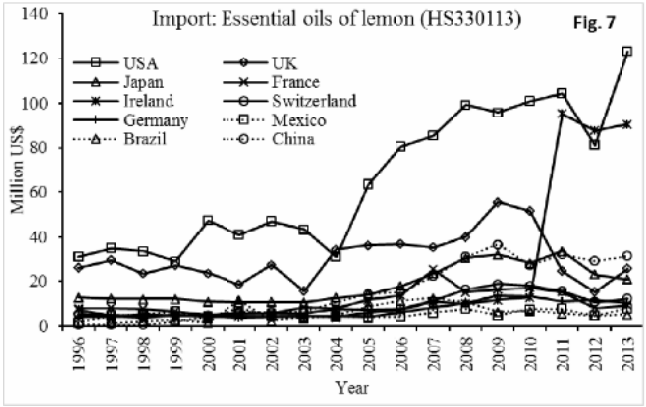


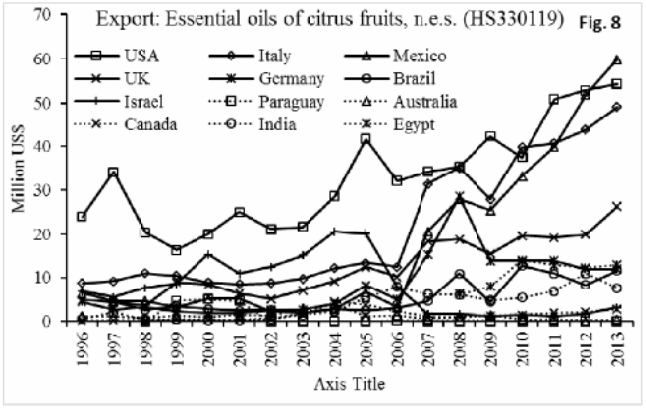


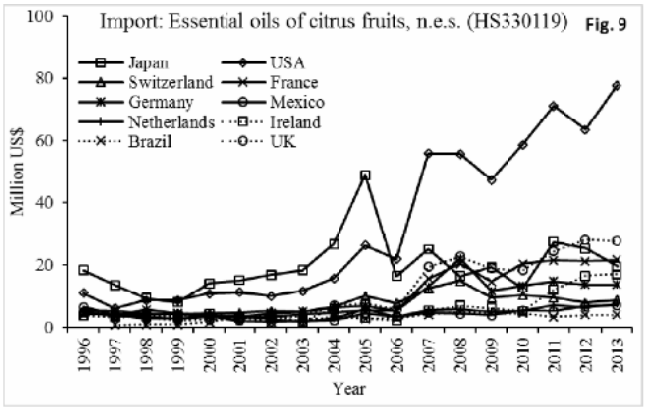


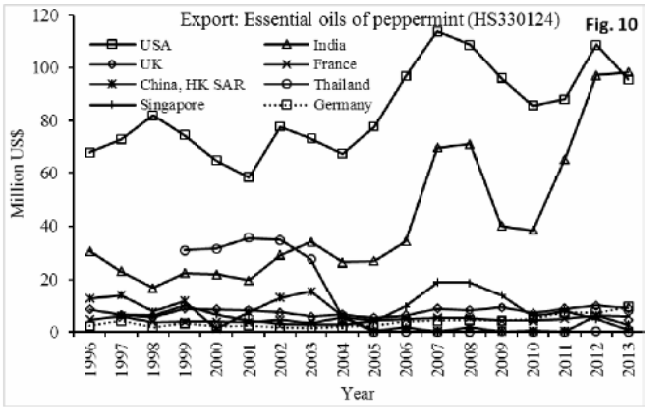


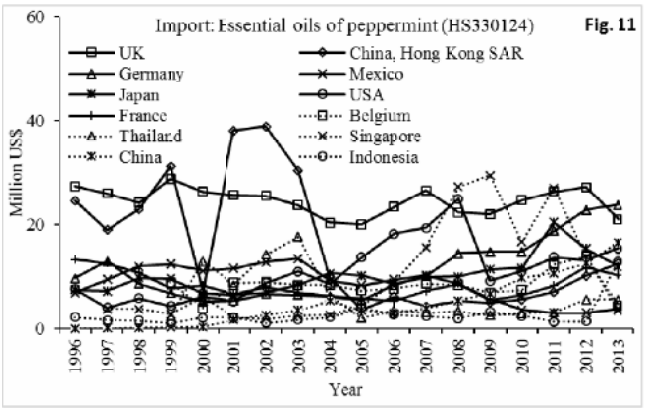


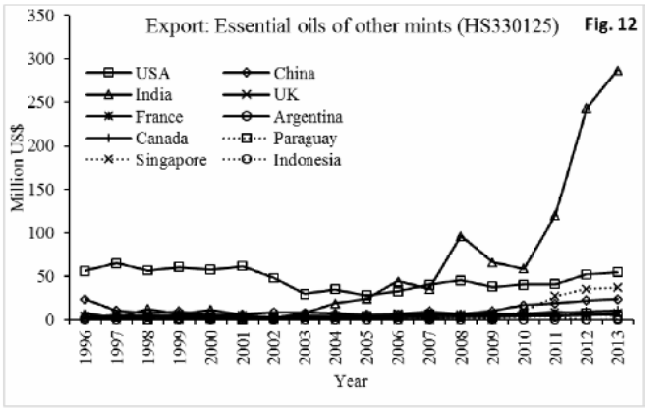


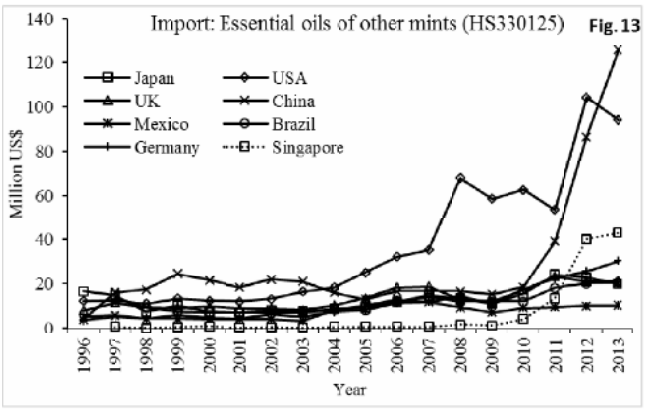


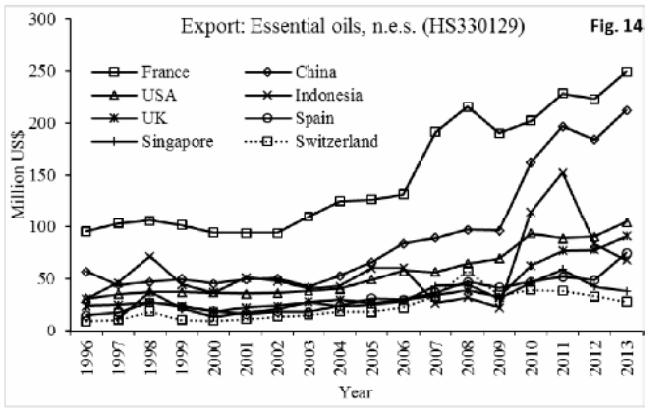

Import: Essential oils of citrus fruits, n.e.s. (HS330119)
Fig. 9
Japan
USA
Switzerland
France
Germany
Mexico
Netherlands
Ireland
Brazil
UK
Million US$
Year

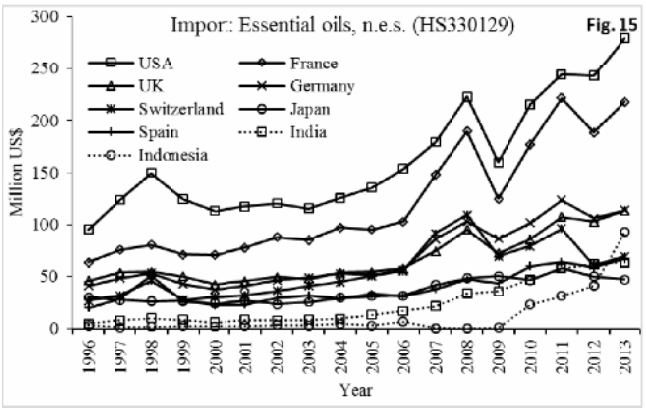

Export: Essential oils of peppermint (HS330124)
Fig. 10
USA
India
UK
France
China, HK SAR
Thailand
Singapore
Germany
Million US$
Year

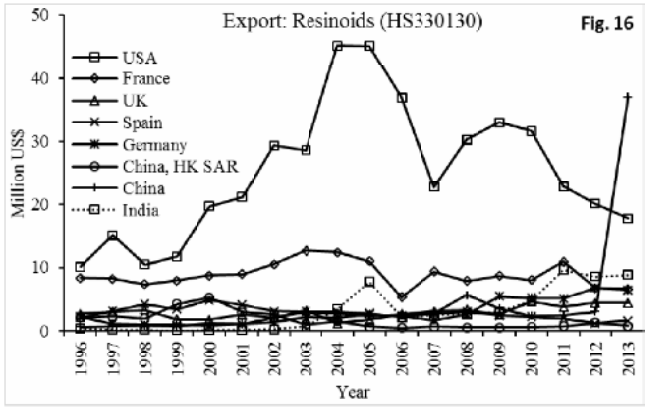

Import: Essential oils of peppermint (HS330124)
Fig. 11
UK
China, Hong Kong SAR
Germany
Mexico
Japan
USA
France
Belgium
Thailand
Singapore
China
Indonesia
Million US$
Year

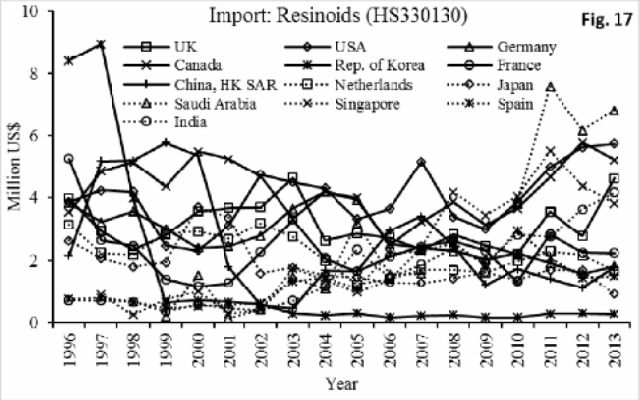

Export: Essential oils of other mints (HS330125)
Fig. 12
USA
China
India
UK
France
Argentina
Canada
Paraguay
Singapore
Indonesia
Million US$
Year

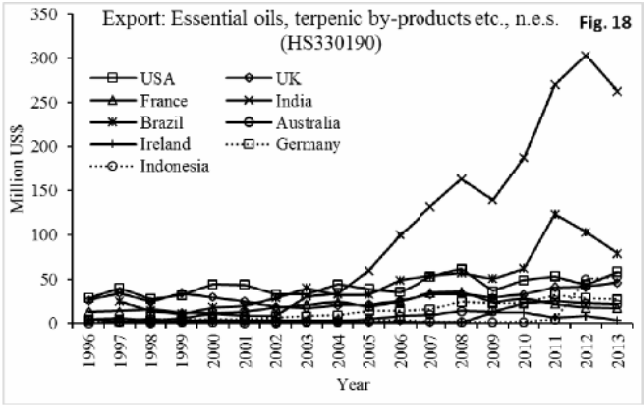

Import: Essential oils of other mints (HS330125)
Fig. 13
Japan
USA
UK
China
Mexico
Brazil
Germany
Singapore
Million US$
Year

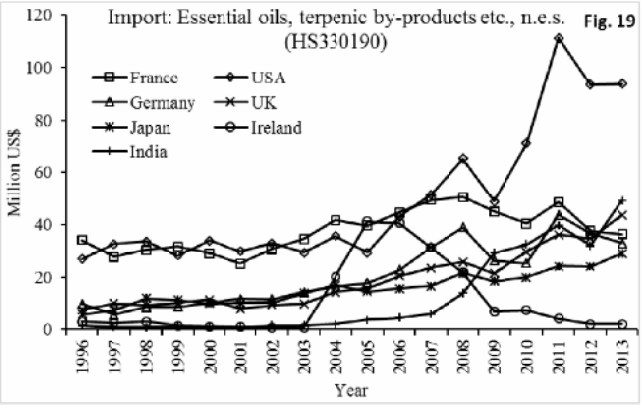

Export: Essential oils, n.e.s. (HS330129)
Fig. 14
France
China
USA
Indonesia
UK
Spain
Singapore
Switzerland
Million US$
Year

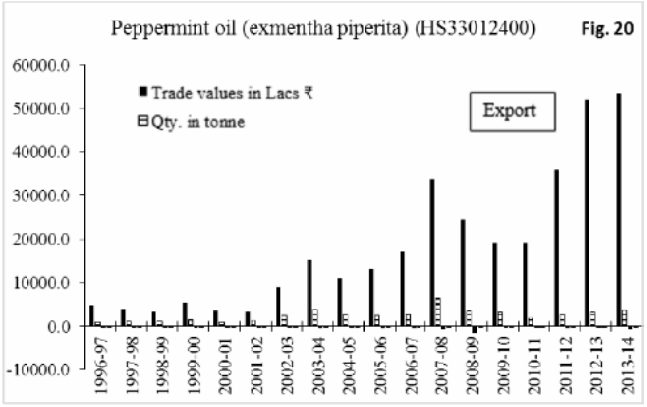

Impor: Essential oils, n.e.s. (HS330129)
Fig. 15
USA
France
UK
Germany
Switzerland
Japan
Spain
India
Indonesia
Million US$
Year

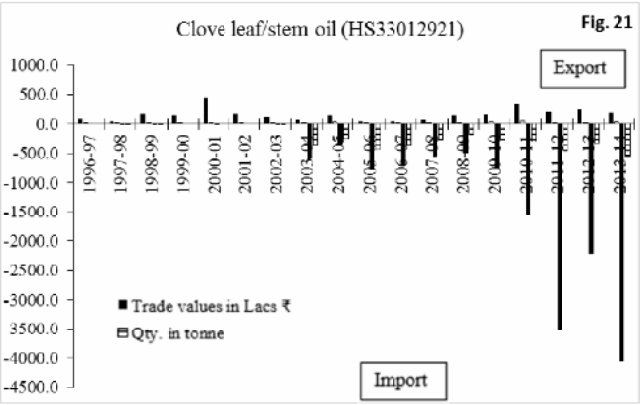

Export: Resinoids (HS330130)
Fig. 16
USA
France
UK
Spain
Germany
China, HK SAR
China
India
Million US$
Year

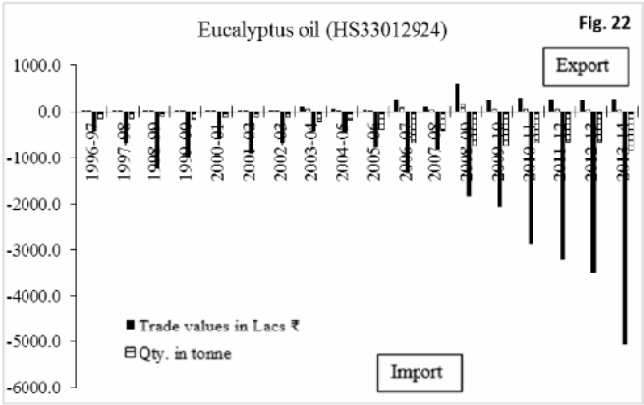

Import: Resinoids (HS330130)
Fig. 17
UK
USA
Germany
Canada
Rep. of Korea
France
China, HK SAR
Netherlands
Japan
Saudi Arabia
Singapore
Spain
India
Million US$
Year

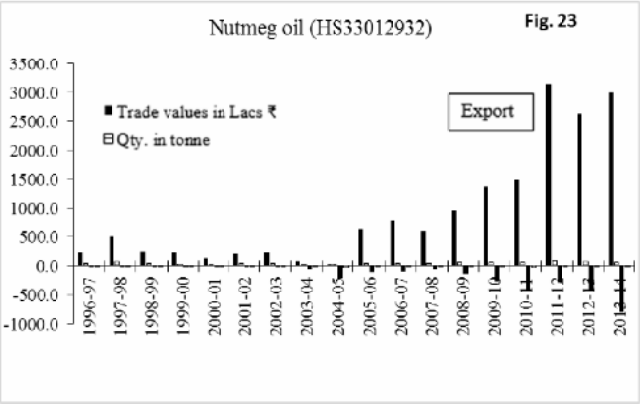

Export: Essential oils, terpenic by-products etc., n.e.s. (HS330190)
Fig. 18
USA
UK
France
India
Brazil
Australia
Ireland
Germany
Indonesia
Million US$
Year

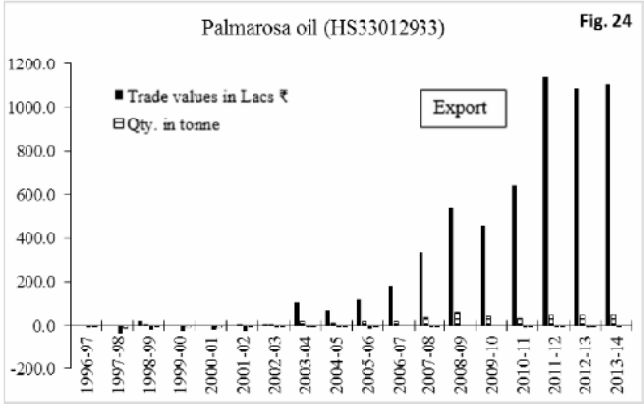

Import: Essential oils, terpenic by-products etc., n.e.s. (HS330190)
Fig. 19
France
USA
Germany
UK
Japan
Ireland
India
Million US$
Year

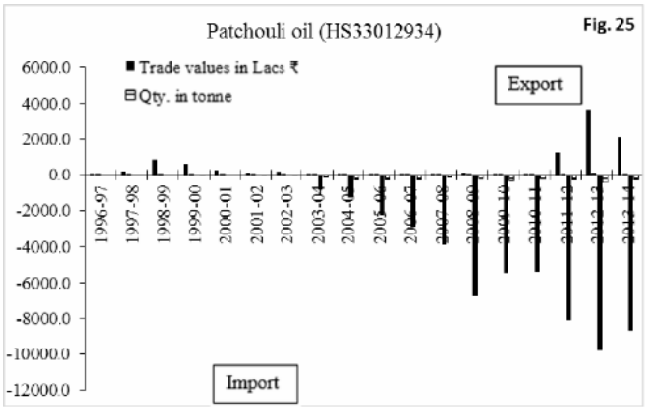

Peppermint oil (exmentha piperita) (HS33012400)
Fig. 20
Trade values in Lacs ₹
Qty. in tonne
Export

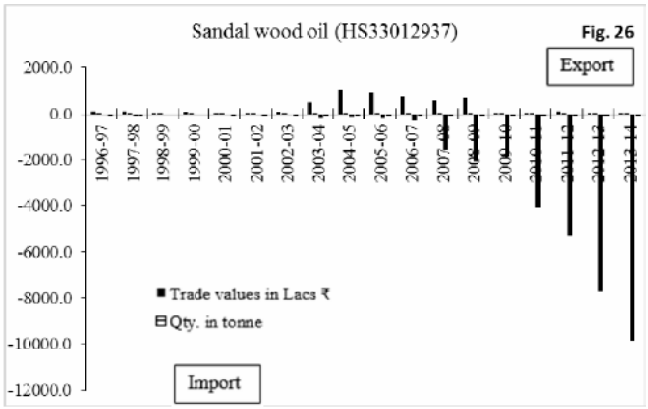

Clove leaf/stem oil (HS33012921)
Fig. 21
Export
Trade values in Lacs ₹
Qty. in tonne
Import

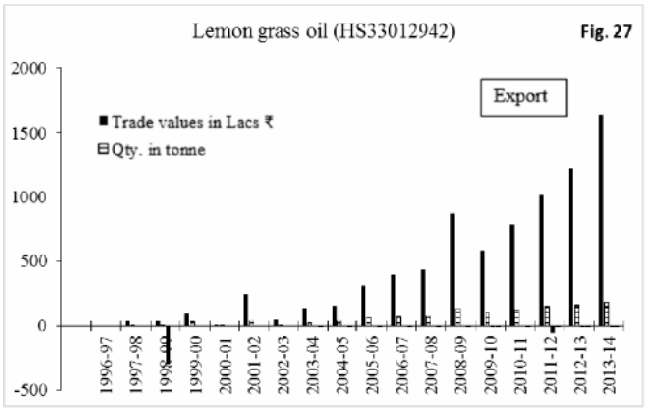

Eucalyptus oil (HS33012924)
Fig. 22
Export
Trade values in Lacs ₹
Qty. in tonne
Import

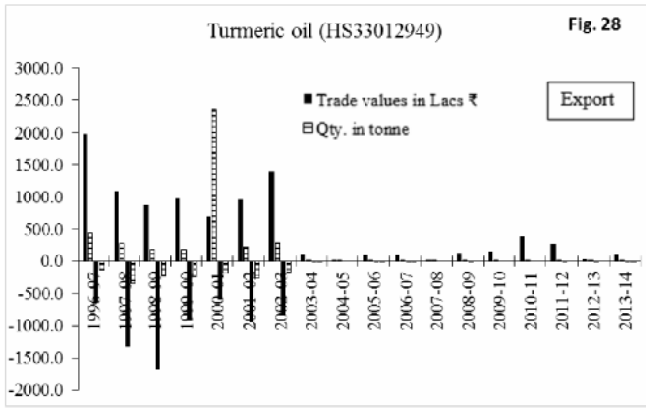

Nutmeg oil (HS33012932)
Fig. 23
Trade values in Lacs ₹
Qty. in tonne
Export

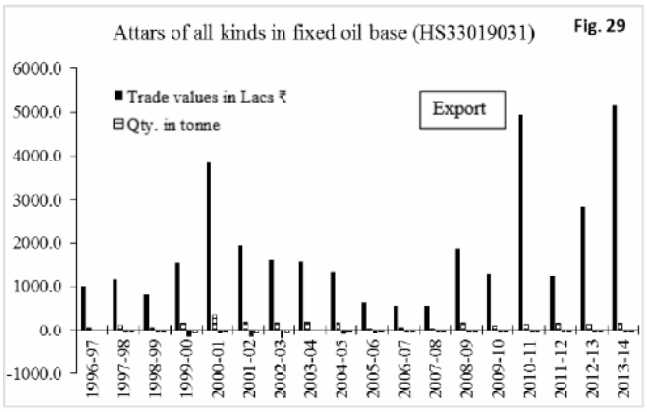

Palmarosa oil (HS33012933)
Fig. 24
Trade values in Lacs ₹
Qty. in tonne
Export

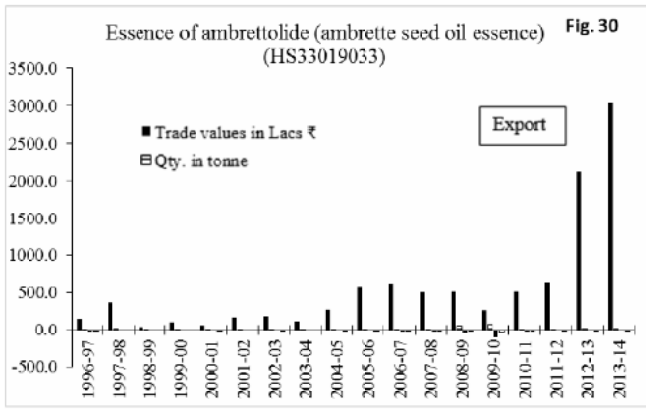

Patchouli oil (HS33012934)
Fig. 25
Trade values in Lacs ₹
Qty. in tonne
Export
Import

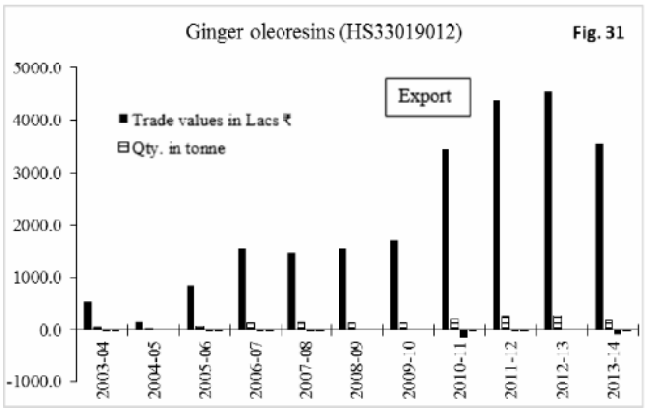

Sandal wood oil (HS33012937)
Fig. 26
Export
Trade values in Lacs ₹
Qty. in tonne
Import

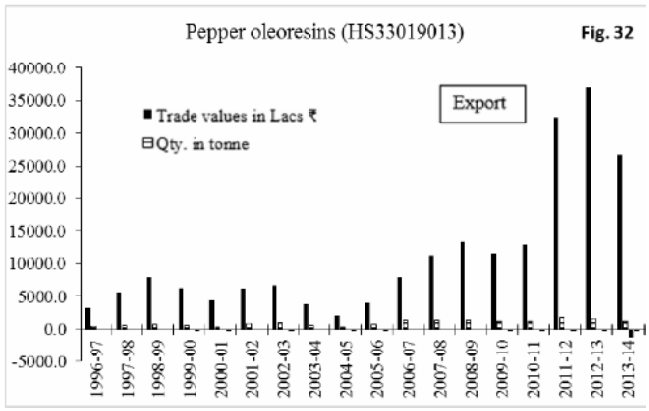

Lemon grass oil (HS33012942)
Fig. 27
Export
Trade values in Lacs ₹
Qty. in tonne

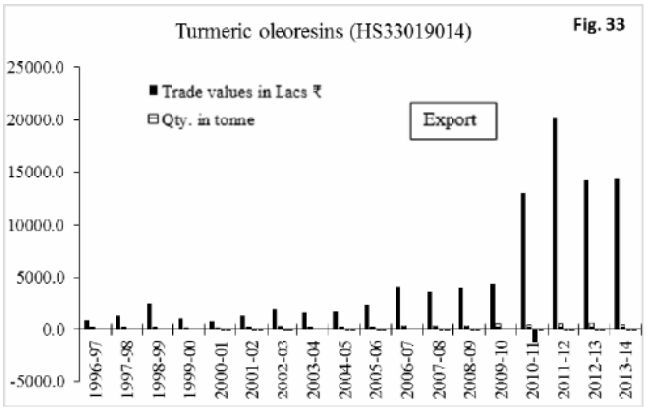

Turmeric oil (HS33012949)
Fig. 28
Trade values in Lacs ₹
Export
Qty. in tonne

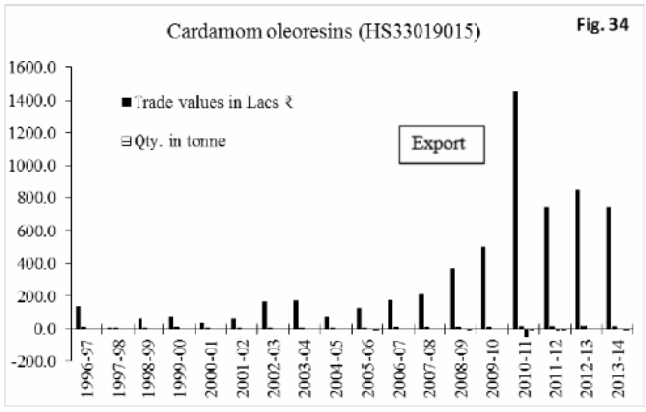

Attars of all kinds in fixed oil base (HS33019031)
Fig. 29
Trade values in Lacs ₹
Export
Qty. in tonne

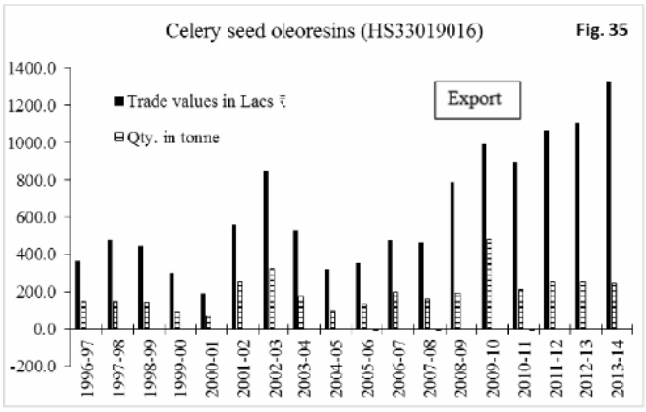

Essence of ambrettolide (ambrette seed oil essence) (HS33019033)
Fig. 30
Trade values in Lacs ₹
Export
Qty. in tonne

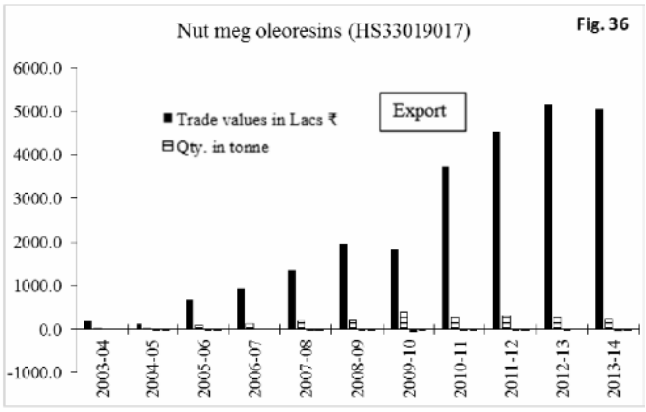

Ginger oleoresins (HS33019012)
Fig. 31
Export
Trade values in Lacs ₹
Qty. in tonne

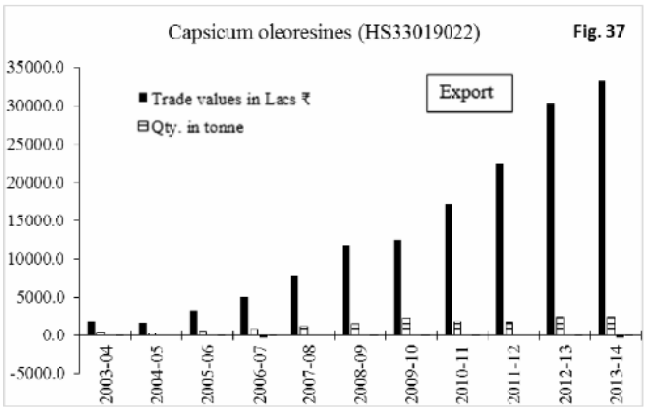

Pepper oleoresins (HS33019013)
Fig. 32
Trade values in Lacs ₹
Export
Qty. in tonne

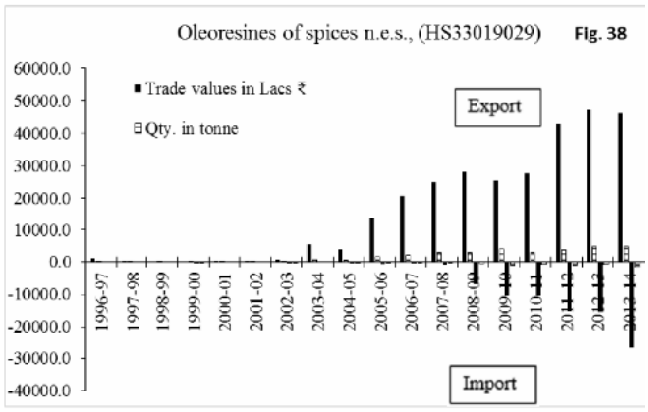


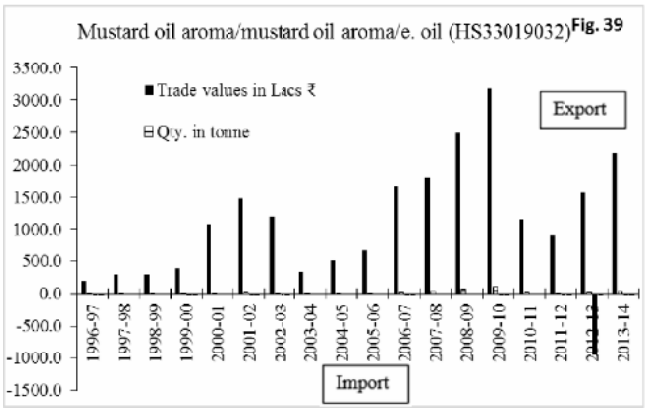












2008-2013 while corresponding trade value surged by 110.2%, from US$ 6m to 13m in the same period.

Import: The USA is the largest importer of HS330119. Its importation to USA has also increased about 14 times, from 524t valued at US$ 11m to 7,286t valued at US$ 78m, and growing 15.7% annually in the period of 1996-2013(Fig 9). In addition,USA accounted 21.6% of the total world import of essential oils of other citrus fruitsby trade value in the same period. Its exportation from UK,

second largest importer after USA, has swelled about six times, from 205t valued at US$ 5 to 1,325t valued at US$ 28m in the period of 1996 to 2013. Also, importation to Switzerland, France, Germany, Netherlands and Ireland have increased by 37.9% (from 111t valued at US$ 5m to 153t valued at US$ 9m), 248.6% (from 102t valued at US$ 4m to 357t valued at US$ 22m), 233% (from 127t valued at US$ 5m to 422t valued at US$ 14m), 52.7% (from 145t valued at US$ 5m to 221t valued at US$ 8m) and 241.7 (from 154t valued at US$ 4m to 525t valued at US$ 17m), respectively. In contrast, some major importers have shown declining trend in the import of essential oils of other citrus fruits: Japan, from 489t valued at US$ 18m to 315t valued at US$ 20m; Mexico, from 553t valued at US$ 7m to 206t valued at US$ 7m; in t1996 to 2013.

Essential oils of peppermint (HS330124)

From 1996- 2013,total global trade in peppermint oil has increased by 50.7%, from US$ 279m to 420m with CAGR of 2.3%. Recently, its trade is growing by 7.3% annually (Fig 1).

Export: India and USA are the leading exporter of peppermint oil with average annual export of 3,126t and 2,570t, respectively. Since 1996, India has been largest exporter of peppermint oil, crossed 5000t mark in 2007 and 2008 (Fig 10). Meanwhile, total export has increased by 97.7%, from 2,021t valued at US$ 31m to 3,996t valued at US$ 98m in the period of 1996-2013. Likewise, its exportation from USA has also increased by 38.1% (from 1,983t valued at US$ 68m to 2,740t valued at US$ 96m) in the same period. In contrast, other major exporters of peppermint oil have seen decline: UK, from 450t valued at US$ 8m to 264t valued at US$ 9m; France, from 154t valued at US$ 5m to 127t valued at US$ 6m; Hong Kong, from 1,132t valued at US$ 13m to 66t valued at US$ 3m; Thailand, from 1,343t valued at US$ 31m to 1t valued at US$ 0.08m (1999-2013) in the period of 1996 to 2013.

Import: Major importers of peppermint oil viz., UK, Hong Kong, France and Belgiumhave reduced importation or static in past 18 years (Fig 11). The UK, one of the biggest importer of peppermint oil, has lessened import by three times, from 1,633t valued at US$ 27 to 552t valued at US$ 21m in the period of 1996 to 2013. Likewise, its importation to Hong Kong, Germany and Belgium havereduced by 71.1% (from 1,327t valued at US$ 25m to 383t valued at US$ 13m), 12.2% (from 579t valued at US$ 10m to 509t valued at US$ 24m), 50.5% (from 575t valued at US$ 13m to 285t valued at US$ 10m) and 69.8 (from 180t valued at US$ 9m to 54t valued at US$ 4m (1999-2013)), respectively in the same duration. Countries with static importation of peppermint oil are Mexico, Japan and USA with average annual import volume of 320t, 255t and 549t, respectively. Notably, China and Indonesia have increased inflow of peppermint oil, from 1t to 243t and 125t to 568t, respectively in the period of 1996 to 2013. In 2013, Indonesia become the largest importer of peppermint oil with 568t valued at US$ 13m.

Essential oils of other mints (HS330125)

From 1996- 2013, total international trade in essential oils of other mints has increased about five times, from US$ 186m to 881m, and growing by 9% annually. Calculated CAGR in past four years is 23.3%, reflecting huge demand worldwide(Fig 1).

Export: Like peppermint oil, India is also the largest exporter of essential oils of other mints with total exported volume of 14,074t valued at US$ 287m in 2013, by far ahead from second and third largest exporters, USA and Singapore, respectively (Fig 12). Its exportation from India has increased more than 40 times, 349t valued at US$ 7m to 14,074t valued at US$ 287m in the period of 1996 to 2013, and growing by 22.8% annually. However, exportation of essential oils of other mints from major exporters like USA, China and UK have decreased by 33.2% (from 1,808t valued at US$ 56m to 1,208t valued at US$ 55m), 56.2% (from 2,207t valued at US$ 24m to 966t valued at US$ 24m) and 3.5% (from 228t valued at US$ 4m to 220t valued at US$ 6m), respectively in the same period.But, its outflow has increased from France, Canada and Singapore reaching 249t, 247t and 1,046t, respectively in 2013.

Import: The USA is the largest importer of essential

oils of other mints followed by China, Singapore and Germany. Its importation to USA has increased by 5 times, from 749t valued at US$ 12 to 3,779t valued at 94min the period of 1996 to 2013, and growing by 9.4% annually(Fig 13). Likewise, China's import of this commoditysurged by 39 times, from 172t valued at US$ m to 6,706t valued at US$ 126m in the same duration. In 2013, Singapore and Germany becamethe largest importers with 1,205t and 1,192t, respectively after China and USA. Other major importers have also registered increased import of this commodity: UK, from 488t valued at US$ 8m to 747t valuedat US$ 21m; Mexico, from 229t valued at US$ 5m to 248t valued at US$ 10m; Brazil, from 776t valued at US$ 14m to 793t valued at US$ 21m (1997-2013) in the period of 1996-2013.

Essential oils, n.e.s. (HS330129)

Total international trade in HS330129 (Essential oils, n.e.s.) has increased more than threefold, from US$ 796m to 2,895m in the period of 1996 to 2013, and growing by 7.4% annually (Fig 1).

Export: China is the largest exporter of other essential oils. Since 1996, its exportation from China has increased by 51%, from 9,782t valued at US$ 57m to 14,767t valued at 212m in 2013 (Fig 14). Similarly, other essential oils exportation fromFrance has increased by 4.1%, from 3,110t valued at US$ 95m to 3,237t valued at US$ 249m in the same period. After China, USA is the largest exporter which exports nearly doubled, from 2,069t valued at US$ 31t to 3,806t valued at US$ 105m in the period of 1996-2013. Also, exportation from Indonesia, UK and Spain have increased by 5.5% (from 2,575t valued at US$ 31m to 2,717t valued at US$ 68m), 15.7% (from 1,614t valued at US$ 24m to 1,868t valued at US$ 91m) and 98.5% (from 871t valued at US$ 15m to 1,729t valued at US$ 75m), respectively.

Import: The USA is the largest destination for other essential oils. Since 1996, its importation to USA has increased by 17.4%, from 5,730t valued at US$ 95m to 6,729t valued at US$ 279m in 2013 (Fig 15).In 2013, Indonesia became second largest importer with volume of 4,486t valued at US$ 92m, about 17 times up from 1996 i.e. 266t valued at US$ 3m. In term of trade value, France ranked second position with total export of US$ 218m (3,880t) in 2013, increased by 12.1% from 3,460t valued at US$ 64m in 1996. Other major exporters of other essential oils with increased export are: Germany, from 2,436t valued at US$ 41m to 2,940t valued at US$ 114m; Switzerland, from 899t valued at US$ 27m to 1,307t valued at US$ 69m; Spain, from 2,460t valued at US$ 20m to 2,742t valued at US$ 67m; from 640t valued at US$ 5m to 2,085t valued at US$ 64m in the period of 1996 to 2013. In contrast, its importation to UK and Japan have decreased by 31.8% (from 3,908t valued at US$ 46m to 2,667t valued at US$ 113m) and 62.8% (from 1.091t valued at US$ 30m to 406t valued at US$ 47m), respectively.

Resinoids (HS330130)

Total international trade in resinoids have increased by 83.6%, from US$ 80m to 147m in the period of 1996 to 2013, and growing 3.4% annually. However, calculated CAGR in past four years is 6.5% (Fig 1).

Export: Exportation of resinoids from USA, the largest exporter, has increased six times, from 1,329t valued at US$ 10m to 8,068t valued at US$ 18m in the period of 1996 to 2013 (Fig 16). Likewise, its exportation from China has also increased considerably, from 99t valued at 1m to 3,683 valued at US$ 37m in the same duration. Recently, India became third largest exporter of resinoids after USA and China. From 1996- 2013, resinoids outflow from India has increased 23 fold, from 25t to 578t. Besides, exportation from UK and Germany has also increased by 138.5% (from 89t valued at US$ 3m to 213t valued at US$ 4m) and 147.6% (from 24t valued at US$ 2m to 59t valued at US$ 6m), respectively. In contrast, some major exporters of resinoids have seen decline: France, from 186t valued at US$ 8m to 117t valued at US$ 7m; Spain, from 116t valued at US$ 2m to 80t valued at US$ 2m; Hong Kong, from 1,167t valued at US$ 2m to 210t valued at US$ 1m (1996-2012); in the period of 1996 to 2013.

Import: Top destinations of resinoids are Saudi Arabia, USA, UK, Canada, Singapore and India. Other significant importers of resinoids include Germany, Hong Kong, France, Netherlands, Japan, Spain, and Rep. of Korea. Its importation to Saudi Arabia, one of the largest importer of resinoids, have increased about four times, from 137t valued at US$ 0.2m to 544t valued at US$ 7m in the period of 1999-2013 (Fig 17).Besides, importation of resinoids to UK (from 188t valued at US$ 4m to 358t valued at US$ 5m), USA (from 146t valued at US$ 4m to 183t valued at US$ 6m), Singapore (from 37t valued at US$ 1m to 111t valued at US$ 4m (2000-2013)), Spain (from 77t valued at US$ 1m to 140t valued at US$ 1m) and India (from 60t valued at US$ 1m to 107t valued at US$ 4m) have also increased in the same period. Several major importers have seen decline in import of resonoids: Germany, from 67t valued at US$ 4m to 20t valued at US$ 2m; Canada, from 267t valued at US$ 4m to 266t valued at US$ 5m; Rep. of Korea, from 196t valued at US$ 8m to 8t valued at US$ 0.3m; France, from 80t valued at US$ 5m to 55t valued at US$ 2m; Hong Kong, from 1,164t valued at US$ 2m to 162t valued at US$ 2m; Netherlands, from 119t valued at US$ 3m to 65t valued at US$ 2m; Japan, from51t valued at US$ 3m to 11t valued at US$ 1m in the period of 1996-2013.

Essential oils, terpenic by-products etc., n.e.s. (HS330190)

In past 18 years, global trade in HS330190 (Essential oils, terpenic by-products etc., n.e.s.) has increased about six times, from US$ 237m to1,372m,and calculated CAGR is 10.3% annually (Fig 1).

Export: India is the biggest exporter of the commodity group HS330190, by far ahead from the nearest major exporters, Brazil and USA.Its exportation of HS330190 has increased about 75 times, from 145t valued at US$ 4m to 10,885t valued US$ 263m, in the period of 1996-2013 (Fig 18). Since 1997, exportation of this commodity from Brazil is almost constant with average annual volume of 36,458t valued at US$ 47m. However, its exportation from USA and France have decreased by 34.8% (from 7,052t to 4,597t) and 5.8% (from 1,014t to 954t), respectively in the period of 1996-2013 while corresponding trade values surged by 104.9% (from US$ 29m to 59m) and 27.9% (from US$ 13m to 17m) in the same period. Notably, exportation of HS330190 from Indonesia was 2,082 valued at US$ 0.2m, third largest exporter, but abruptly declined in subsequent years (129t to 375t in the period of 1997-2011), and recovered in 2012 and 2013 with exported volume of 1642t and 1542t, respectively. Meanwhile, other major exporters of HS330190 have registered positive growth rate: UK, from 2,528t valued at US$ 26m to 3,598t valued at US$ 47m; Australia, from 162t valued at US$ 4m to 458t valued at US$ 22m; Ireland, from 144t valued at US$ 4m to 448t valued at US$ 3m; Germany, from 274t valued at US$ 3m to 2,336t valued at US$ 27m in the period of 1996-2013.

Import: In term of trade value, USA, France, Germany, UK, Japan, India, and Irelandaccount half of the total importof HS330190 in past 18 years. Its importation to USA has increased fourfold, from 1,749t valued at US$ 27m to 7,507t valued at US$ 94m in the period of 1996-2013(Fig 19). Similarly, exportation of HS330190 from France, Germany, UK and India havealso increased by 32.4% (from 1,371t valued at US$ 34m to 1,815t valued at US$ 36m), 29.1% (from 2,036t valued at US$ 10m to 2,629t valued at US$ 33m), 166.6% (from 1,559t valued at US$ 8m to 4,156t valued at US$ 44m) and 948.3% (from 192t valued at US$ 1m to 2,011t valued at US$ 49m), respectively in the same period. In contrast, its inflow to Japan and Ireland have lessened by 20.4% (from 1,566t valued at US$ 6m to 1,247t valued at US$ 29m) and 6.1% (from 316t valued at US$ 3m to 297t valued at US$ 2m), respectively in the period of 1996-2013.

India's export-import in EORs

India is the largest exporterof EORs based commodities with more than 60 unique HS numbers allotted to them (Table. 2) (for more detail please see suppl. Table 2).

Essential oils of orange (HS33011200): From 1996-97 to 2013-2014, orange essential oil exportation from India has increased, from 0.6t

valued at ₹ 2L to 76.6t valued at 153.9L. Its importation to India, however, increased more than fivefold, from 408.7t to 2155.9t with corresponding increased 13 times, from ₹ 349.1L to ₹ 4638.9L, in the same period. Recently, orange oil imported quantity and corresponding trade value is growing by 10.2% and 21.9%, respectively.

Essential oils of lemon (HS33011300): Likewise, outflow of lemon oil from India has soared, from 0.3t valued at ₹ 1.7L to 93.9t valued at ₹ 404.2L, in the period of 1996-97 to 2013-14. Also, its importation to India has increased fourfold, from 30.2t to 122.2t, in the same period. Remarkably, in past four years imported volume is almost similar, but corresponded trade value is growing by 8.1% annually.

Citronella oil ceylon type (HS33011902): Regular exportation of citronella oil from India started since 2001-02 with average annual exported volume of 27.9t valued at ₹ 98.8L. In contrast, importation to India is continuous since 1996-97, except in 2003-04. The quantity of import has increased more than threefold, from 21.3t valued at ₹ 37.7L in 1996-97 to 69.1t valued at ₹ 745.5L in 2013-14. In recent years, import volume has lessened but corresponding trade value is growing by 8.5% annually.

Jasmin concrete (HS33012201): Exportation of jasmin concrete from India has increased, from 2.1t valued at 411.7L to 6.6t valued ₹ 1634.6L in the period of 1996-97 to 2007-08. No export observed in 2008-09, 2090-10 and 2013-14 while average annual export volume of 5.7t valued at 1367.7L was recorded in the span of three years (2010-2011 to 2012-2013). Its importation to India is not frequent in recent years, accounting less than 1t annually.

Peppermint oil (*Mentha piperita*) (HS33012400):India is the leading exporter of peppermint oil. Since 1996-97, its exportation from India has increased about three times (CAGR: 7.6%), 1019.7t to 3790.5t in 2013-14 while corresponding trade value surged more than ten times (CAGR: 14%), from ₹ 5084.7L to 53417.1L in the same period with highest export i.e.6565.7t in 2007-08. Average annual importation of peppermint oil to India is 30.5t valued at 384.8L, and 21.5t is observed in 2013-14 (Fig. 20).

Spearmint oil (*Mentha spicata*) (33012510):Its outflow from India has increased more than four times, from 81.1t valued at inr 555.2L to 369.6t valued at inr 5693.6L in the period of 1996-97 to 2013-14 with average annual exportation of 208.1t. Also, spearmint oil is significantly imported to India withaverage quanity of 10t.

Water-mint oil (*Mentha aquatic*) (HS33012520): Water-mint oil trade from, and to India is relatively less and not frequent as well. Average annual exportation from India is 4.1t valued at ₹ 28.7L, and imported volume on average is 0.1t valued at ₹ 1.3L.

Bergamont oil (ex-mentha citrate) (HS33012540): Exportation of bergamont oil from 1998-99 to 2007-08 was significantly high with average annual exported quantity of 100.2t valued at ₹ 527.5L, but in subsequent years, it climb down to around 1t. Likewise, importation to India is about 1-2t in past several years. In past 18 years, most of the import was concentrated in the period of 1996-97 to 2007-08 with average annual imported volume of 24.3t valued at ₹ 116.9L.

Anise oil (aniseed oil) (HS33012911): On average, India's annual export of anise oil is 24.3t valued at ₹ 120L in past 18 years while importation to India is 65.5t valued at ₹ 367.9L in the same period. Highest export (113.3t) and Import (304.7t) were observed in 2001-02 and 2004-05, respectively, and in 2013-14 it is 36.1t valued at ₹ 288L and 67.9t valued at ₹ 649.6L, respectively.

Cajuput oil (HS33012912): Trade in Cajuput oil with India is not consistent in the studied period. Its average annual exportation and importation is 3t valued at ₹ 23.4L and 1.2tvalued at ₹ 6.9L, respectively.

Cananga oil (HS33012913): Average annual export from, and import to India volume is 0.4t in past 18 years. In 2013-14, its imported volume is 0.5t valued at ₹ 17.4L.

Carawayoil (HS33012914): From India, its highest export was observed in 1999-00 with 108.4t in the studied period. Recently, however, exported volume

is hovering around 1-2t, and 0.5t valued at ₹ 16.2Lis recorded in 2013. Average annual importation of caraway oil to India is 3t, and 0.9t valued at ₹ 23.6L is observed in 2013-14.

Cassia oil (HS33012915): On average, annual exportation of Cassia oil from India is 1.2t valued at ₹ 23L while importation to India is 2.3t valued at 24.7L. In 2013-14, export and import volumes are 0.2t valued at ₹ 8.8L and 2.9t valued at ₹ 77.4L, respectively.

Cedarwood oil (33012916): Since 1996-97, its exportation from India has increased more than 28 times, from 0.3t to 8.5t in 2013-14, and highest export i.e. 23.1t recoded in 2012-13. Notably, in past four years, there is no significant change in the exported volume of the cedarwood oil but corresponding trade value is growing 31.4% annually. Likewise, its importation to India has also increased vigorously, from 2.4t valued at ₹ 6.7L to 57.8t valued at 818.8L in the period of 1996-97 to 2013-14. Past four year CAGR of import in term of quantity and trade value are 44.5% and 58.6%, respectively showing massive demand in India.

Cinnamon leaf oil (HS33012918): Average annual exportation of Cinnamon oil from India is 4.7t valued at ₹ 44.3L, and 3.5t valued at ₹ 44L is recorded in 2013-14. Its importation to India has increased from 1.5t valued at ₹ 5.4L in 1996-97 to 59.9t valued at 526.2L in 2013-14. Its import to India in term of quantity and trade value is growing by 7.1% and 15.1%, respectively in past four years.

Cinnamon bark oil (HS33012917): Average annual exportation of cinnamon bark oil form India is 1.4t, translating to the trade value of ₹ 16.7L. Highest export volume equal to 3.9t valued at ₹ 37L was recorded in 2009-10. In subsequent years, however, quantity of export decreased but corresponding trade value surging, and 2.7t valued at ₹ 46.6L is observed in 2013-14. Its average annual importation to India is 0.8t valued at 19.1L, and 0.9t valued at ₹ 95L is recorded in 2013-14.

Clove leaf/stem oil (HS33012921): Since 1996-97, exportation of this plant based commodity from India has increased, from 0.2t valued at ₹ 85.2L to 29.1t valued at ₹ 191.5L in 2013-14(Fig. 21). In past few years, however, growth rate of exported volume as well as corresponding trade value has declined by -13.5% and -12.9%, respectively. Since 2002-03, significant importation of clove leaf/stem oil to India was observed with import volume of 5.6t valued at ₹ 21L, and in subsequent years, its import increased about hundred times, reaching 552.1t valued at 4053.2L in 2013-14. Recently, its import is growing by 17% annually.

Coriander seed oil (HS33012922): Average annual exportation of coriander seed oil from India is 16.1t. Highest export was observed in the year of 2001-02 with 80.5t valued at ₹ 869.5L while 9.3t valued at is recorded in 2013-14. Likewise, its annual importation to India is 6.6t, and 11.1t valued at 487.2L is observed in 2013-14. Notably, imported volume is falling by -10.3% annually while corresponding trade value is surging by 30.5%, recently.

Dill oil (anethum oil) (HS33012923): Since 1997-98, exportation of dill oil has decreased considerably, from 8.5t valued at ₹ 50.4L to 1.5t valued at ₹ 34L in 2013-14. Highest export was seen in 2002-03 with 30.7t valued at ₹ 207.2L. Its importation to India can be traced back to 1998-99 with import volume of 0.3t valued at 6.6L, which is increased up to 3.8t valued at 170.1L by 2013-14. Dill oil's quantity of import to India is almost constant since past four years, but corresponding trade value is growing by 19.2% annually.

Eucalyptus oil (HS33012924): Exportation of this commodity has increased, from 2t valued at ₹ 5.9L in 1997-98 to 37.5t valued at ₹ 273.1L in 201-14, and highest export was observed in 2008-09 i.e. 150t valued at ₹ 609.4L. However, its exportation has declined, recently. Since 1998-97,its importation to India, however, surged by more than 5 times, from 156.6t valued at ₹ 422.9L to 818.3t valued at ₹ 5064.1L in 2013-14. Besides, Eucalyptus oil import to India is growing by 5.3% annually while corresponding trade value is surging by 15.3%, in recent years (Fig. 22).

Fennel seed oil (HS33012925): From 1997-98 to 2002-03, average annual exportation of fennel seed oil from India was 60.1t. Thereafter, its export decreased considerably, and in 2013-14 it gone to

3.5t valued at ₹ 68.4L. Meanwhile, its importation to India is also very less and discontinuous as well (0.3t valued at ₹ 6.1L in 2013-14).

Ginger oil (HS33012926): Initially, the exportation of ginger oil from India was very less about 1t/year, but since 2003-04 it has increased, from 12.t valued at ₹ 456.3L to 26.2t valued at ₹ 1802.4L in 2013-14. In contrast, its importation to India has decreased by about 10 times, from 8.6t valued at ₹ 55.5L to 0.9t valued at ₹ 38.7L in the period of 1996-97 to 2013-14.

Ginger grass oil (HS33012927): From 1996-97 to 2002-03, ginger grass oil exportation from India was significantly high, reaching peak in 2000-01 with 10.3t valued at 1291.4L. Thereafter, its exportation decreased and by 2013-14 it reached to 0.3t valued at ₹ 8.6L. Initially, around 1t of ginger grass oil was imported to India, but far last several years virtually no import observed.

Clove bud oil (HS33012928): Average annual exportation of clove bud oil from India is 10.5t, and 8t valued at ₹ 295.8L is recorded in 2013-14. Notably, its export volume has declined (CAGR: -4.1%) recently but corresponding trade value is soaring (CAGR: 14.3%). Since 1996-97, Clove bud oil importation to India has decreased by more than 4 times, from 12.1t valued at ₹ 29.3L to 2.7t valued at 65.3L in 2013-14, and average annual import volume is 12.1t in the same period.

Tuberose concrete (HS33012931): Since 1999-00, its exportation from India is almost constant with average export of 0.9t but corresponding trade value has grown by 43.6% annually. From 1999-00 to 2013-14, its outflow has increased, from 0.2t valued at inr 2L to 0.4t valued at inr 447L. Besides, Tuberose concrete average annual importation to India is 3.4t, and 1.6t valued at ₹ 164.1L is registered in 2013-14.

Nutmeg oil (HS33012932): From 1996-97 to 2013-14, exportation of nutmeg oil from India has increased by 35.6%, from 50.4t to 68.3t, while corresponding trade value surged by 1189%, from ₹ 233.5L to ₹ 3009.4L(Fig. 23). Notably, its export is growing by 1.4% annually in recent years but corresponding trade value is soaring by 19.2%. Likewise, importation of the same commodity to India has increased more than 10 times, from 1.2t valued at 33.9L to 12.4t valued at ₹ 790.9L in the period of 1996-97 to 2013-14. Remarkably, calculated CAGR of past shows fall in imported volume (-6.1%) and increase in corresponding trade value (17.3%).

Palmarosa oil (HS33012933): No exportation of palmarosa oil from India observed in between 1996-97 to 2000-01 except in 1998-99 (4.8t valued at ₹ 22.6L). Since 2001-02, regular exportation started with 0.2t valued at ₹ 1.3L,and reached 52.1t valued at ₹ 1104.8L in 2013-14. Since last seven years, average annual exportation of palmarosa oil from India is 46.4t.Past four years data shows, its export is growing by 8.9% annually.From 1996-97 to 2001-02, average annual importation of palmarosa oil to India was 5.8t, thereafter declination observed in subsequent years, and by 2013-14 it come down to <1t(Fig. 24).

Patchouli oil (HS33012934): From 1996-97 to 2013-14, its exportation from India has increased substantially, from 0.7t valued at inr 61.7L to 60.7t valued at inr 2104.1L. Importation of Patchouli oil to India started from 1999-00 with import volume of 0.3t valued at 5.3L, and by 2013-14 it swelled up to 273t valued at ₹ 8720.9L(Fig. 25). Notably, in past four years import volume is almost constant (CAGR: 1.6%) while corresponding trade value is growing by 12.7% annually.

Pepper oil (HS33012935): Since 1996-97, outflow of pepper oil from India has increased by 43 times, from 2.2t valued at 30.7L to 94.4t valued at ₹ 6860.2L in 2013-14 with highest export in 2007-08 i.e., 160.2t valued at ₹ 1970.2L. Inpast several years exported volume has registered continuous decline (CAGR: -4.9%) while corresponding trade value is soaring by 21.3% annually. Average annual importation of pepper oil to India is around 2.6t, and 1.4t valued at 100.5L is observed in 2013-14.

Petitgrain oil (HS33012936): It's exportation from India has decreased substantially, from 698.7t valued at in 262.6L in 1996-97 to 0.01t valued at ₹ 0.3L in 2013-14. In contrast, importation of petitgrain oil to India has increased, reaching 8.1t valued at

157.5L in 2013-14. Recently, its import is growing by 5.2% while corresponding trade value is growing by 22.2%.

Sandal wood oil (HS33012937): From 1996-97 to 2013-14, outflow of sandalwood oil from India has reduced substantially, from 11.5t valued at ₹ 95.5L to 0.4t valued at 56.3 with CAGR -16.8%. Its importation to India, however, increased hugely, from 1t valued at ₹ 10.3L to 34.4t valued at ₹ 9865.1L in the same period. Meanwhile, its trade value (CAGR: 24.6%) of import is growing four times higher than the corresponding volume (CAGR: 6.1%) in past four years(Fig. 26).

Camphos oil (HS33012941): Its exportation from India has increased significantly, from 0.2t valued at ₹ 3.7L to 7.9t valued at 390.8L in the period of 1996-97 to 2013-14 with highest export in 2009-10 i.e., 33.1t valued at inr134.4L. Recently, its export is falling by -9.7% annually while corresponding trade value is growing by 36.5%. Importation of Camphos oil to India has gained momentum in recent years, reaching 4.9t valued at 250.4L in 2013-14.

Lemon grass oil (HS33012942): From 1996-97 to 2013-14, exportation of lemon grass oil has increased by more than 33 times, from 5.5t valued at ₹ 33.9L to 182.7t valued at 1639.3L. In addition, export volume is growing by 9.4% annually while corresponding trade value CAGR is 20.3% (Fig. 27). Importation of Lemon grass oil to India has been observed for last several years with average annual import of 0.5t valued at ₹ 9.8L, and 0.3t valued at ₹ 7.5L was observe in 2013-14.

Ylang ylang oil (HS33012943): In past 18 years, average annual exportation of ylang ylang oil from India is 0.5t, and imported quantity is to India is 2.3t. Recently, its import is growing by 19.3% annually while corresponding trade value is soaring by 35.6%.

Davana oil (HS33012944): Since 1996-97, exportation of Davana oil from India has increased substantially, from 0.3t valued at ₹ 2.8L to 5t valued at 994L in 2013-14 with highest export of 7.9t valued at 1836.8L in 2008-09. Its export is growing by 8.5% annually in recent years. No import of Davana oil to India was observed except in 2010-11 and 2012-13 with import quantity of 0.1t and 3.2t, respectively.

Cumin oil (HS33012945): Significant exportation of cumin oil from India started since 2002-03 with export volume of 1.5t valued at ₹ 3.9L, and by 2013-14 it has reached up to 8.9t valued at ₹ 258.7L. Its average annual importation to India is 2.5t, and 0.1t valued at ₹ 9.4L is recorded in 2013-14.

Celery seed oil (HS33012946): From 1997-98 to 2013-14, exportation of celery seed oil from India has increased by more than 20 times, from 1t valued at ₹ 9L to 23.3t valued at 760.3L with highest export in 2005-06 i.e. 54.4t valued at ₹ 167.1L. In past several years, export quantity is around 20t with CAGR of 0.7% while corresponding trade value is growing by 2.6% annually. Celery seed oil importation to India is not regular, average annual import volume is 0.6t valued at ₹ 5.6L.

Garlic oil (HS33012947): Since 1997-98, its exportation from India has increased by two order of magnitude, from 0.2t valued at ₹ 5.7L to 56.9t valued at ₹ 712.8L in 2013-14. Additionally, its export is growing by 2.5% annually while corresponding trade value CAGR is 10.7%. Garlic oil importation to India was started in 2002-03 with import quantity of 2.6t valued at ₹ 4.4L, and reached up to all time high -15.8t valued at 576.7L in 2013-14. Its import is increasing with CAGR of 17.1% while corresponding trade value is soaring by 29.8% annually in last four years.

Paprika oil (HS33012948): In the period of 2003-04 to 2013-14, paprika oil exportation from India has lessened substantially, from 116.4t valued at ₹ 846 to 3.3t valued at 89.4L. Occasional, but some time significant import (2009-10: 102.6t valued at 1077.2L) to India has been seen. Last recorded year of import is 2010-11 with volume of 0.4t valued at ₹ 9.5L.

Turmeric oil (HS33012949): From 1997-98 to 2013-14, its exportation from India has lessened hugely, from 435t valued at ₹ 1979.8 to 3.9t valued at ₹ 118L. The overall fall in the annual growth rate of export quantity is almost doubled (23%) to the corresponding trade value (14.5%). Likewise, turmeric oil importation to India also dipped, from

146.6t valued at ₹ 623.9L in 1996-97 to 4.2t valued at ₹ 13.9L in 2003-04, and virtually no import observed in subsequent years(Fig. 28).

Spices oil, n.e.s. (33012950): Exportation of other spices oil from India has increased about five fold, from 24.1t valued at 120.7L in 2003-04 to 115.6t valued at ₹ 2805.4L in 2013-14. Since last 11 years, its export is growing by 15.3% annually while corresponding trade value is surging by 33.1%. Its average annual importation to India is 6.6t. Import quantity is increasing by 2.5% annually while corresponding trade value is soaring by21%.

Agar oil (HS33013010): In the late 1990s, its exportation from India was below 1t and now it has reached up to 4.7t valued at 78.5L in 2013-14 with highest export in 2005-06 i.e. 93.7t valued at 744.8L. Notably, export volume is growing by 28.5% annually while corresponding trade value is soaring by 177.8% in past four years. Significant agar oil importation to India was started since 2000-01 with import volume of 18.3t valued at 90.4L, now it is reduced to 0.2t valued at ₹ 15.3L in 2013-14.

Flavouring essences, all types, including those for liquors (resinoids) (HS33013091): From 2003-04 to 2013-14, exportation of this plant based commodity group from India has increased about 23 times, from 14.7t valued at ₹ 116.2L to 334.8t valued at ₹ 1585.8L with highest export in 2011-12 with 591.1t valued at ₹ 1944.2L. Recently, export is falling by -6.7% annually while corresponding trade value is soaring by 8.1%. Importation of this commodity to India is growing by 27.7% annually, from 2.1t valued at ₹ 17L to all time high 31.5t valued at 1325.5L in the period of 2003-04 to 2013-14. Since 2010-11, imported volume growth rate is 14.9% while corresponding trade value is growing by 36.8% annually.

Other resinoids n.e.s. (HS33013099): In past 11 years, average annual export of this commodity group is 196.1t. Notably, export quantity is falling by -7.9% annually in recent years but corresponding trade value is growing by 17.5%. Likewise, average annual importation of other resinoids to India is 77.3t valued, and 77.7t valued at 1134.9L was observed in 2013-14. Though import volume is falling by -12% annually, corresponding trade value is going up by 2.1.

Attars of all kinds in fixed oil base (HS33019031): Since 1996-97, its outflow from India has increased about threefold, from 59.5t valued at 1014.2L to 157.6t valued at ₹ 5155.2L in 2013-14 with highest export in 2000-01 i.e., 361.9t valued at 3852.3L. Average annual importation of attars to India is 10.1t valued at ₹ 49.8L, and 0.1t valued at ₹ 0.7L is recorded in 2013-14(Fig. 29).

Essence of ambrettolide (ambrette seed oil essence) (HS33019033): In past 18 years, average annual exportation of ambrettolide essence is 15.8t, and 17.3t valued at ₹ 3042.5L was registered in 2013-14(Fig. 30). Remarkably, its export quantity is growing by 8.4% annually in recent years while corresponding trade value is surging by 55.9%. Importation of ambrettolide essence to India has decreased, from 5t valued at inr 15.3L to 0.1t valued at inr 8.8L in the period of 1996-97 to 2013-14.

Fennugreek oleoresins (HS33019011): From 1996-97 to 2013-14, its exportation from India has swelled seven fold, from 11.6t valued at ₹ 21.1L to 82.3t valued at ₹ 1051.7L. As the export quantity of the fennugreek oleoresins is increasing (CAGR: 8.3%) in recent years, corresponding trade value is falling -0.4%. Its average annual importation to India is 9.5t with highest import in 1998-99 (39t valued at inr 12.4L), and 1t valued at 41.9L was observed in 2013-14.

Ginger oleoresins (HS33019012): Since 2003-04, its outflow from India has increased about four times, from 46.9t valued at ₹ 530.9 to 185.2 valued at 3550.9L with highest export in 2012-13 i.e. 260.9t valued at ₹ 4636.5L(Fig. 31). Average annual inflow of ginger oleoresins to India is 1.4t, though not regular in past 11 years, and 3t valued at 85.4L was recorded in 2013-14.

Pepper oleoresins (HS33019013): From 1996-97 to 2013-14, its exportation from India has increased about two and half times, from 518.6t valued at 3241Lto 1272.7t valued at ₹ 26675L with highest export in 2011-12 (1837.3t valued at ₹ 3289.6L). Despite of fall in export of pepper oleoresins in recently, corresponding trade value is soaring by

20%. Its importation to India can be seen since 1999-00 with 4.6t valued at 62.7L. In subsequent years, however, regular import was missing till 2009-10, by 2013-14 it is 77t valued at ₹ 1326.8L(Fig. 32).

Turmeric oleoresins (HS33019014): In the period of 1996-97 to 2013-14, exportation of turmeric oleoresins from India has increased by threefold, from 154.7t valued at ₹ 867.3L to 472.6t valued at 14364.2L with highest export in 2012-13 (637.9t valued at ₹ 14208.8L)(Fig. 33). In past four years, average annual exported volume is 526.7t valued at ₹ 15461.5L. Average annual importation of turmeric oleoresins to India is 2.1t valued at ₹ 103.1L with highest import in 2010-11 i.e. 17t valued ₹ 187.9L, and 1t valued at 68.4L was observed in 2013-14.

Cardamom oleoresins (HS33019015): Since 1996-97, its outflow from India has increased by 70.3%, from 8.6t valued at ₹ 134.2L to 14.7t valued at ₹ 745.1L in 2013-14(Fig. 34). Recently, exported volume is almost constant but corresponding fall in the trade value is profound (-15.5% annually). Its importation to India is significantly low, highest import was observed in 2010-11 i.e. 2.6t valued at inr 49.9L.

Celery seed oleoresins (HS33019016): Its exportation from India has increased by 63.3%, from 151.1t valued at ₹ 366 in 1996-97 to 246.8t valued at ₹ 1328.3L in 2013-14. Outflow of the celery seed oleoresins is growing by 3.6% annually since last four years while corresponding trade value CAGR is 10.4%. In the studied period, its importation to India is largely missing, and noted export is attributed to the year 2010-11 with import volume of 0.5t valued at ₹ 2.7L(Fig. 35).

Nut meg oleoresins (HS33019017): From 2003-04 to 2013-14, exportation of Nut meg oleoresins from India has increased by more than 8 times, from 28.7t valued at ₹ 191.7L to 237.9t valued at ₹ 5064.2L. However, export is falling by -4.1% annually in recent years while corresponding trade value is soaring by 7.9%. Relatively, its importation to India is low with annual average of 1.9t, and 7.4t valued at 41.3L was observed in 2013-14(Fig. 36).

Clove oleoresin (HS33019021): Since 1996-97, its exportation from India has increased more than seven fold, from 1.7t valued at ₹ 17.3L to 12.1t valued at ₹ 424.4L in 2013-14, and growing by 11.2% annually since past four years while corresponding trade is soaring by 33.8%. In contrast, clove oleoresins importation to India has dipped drastically, from 22.6t valued at ₹ 136.5L to o.2t valued at ₹ 1L in the same period.

Capsicum oleoresines (HS33019022): Its exportation from India has increased more than six fold, from 367.1t valued at ₹ 1937.7L in 2003-04 to 2420.2 valued at ₹ 33264.4L in 2013-14 (Fig. 37). In term of exported volume of capsicum oleoresins, past four year CAGR is 7.5% while corresponding trade value is growing by 17.8% annually. Its importation to India has also increased, though interrupted by no import in certain years, from 9t valued at ₹ 72L to 36.9t valued at ₹ 448.6L with average annual import of 15.9t in past 11 years.

Corriander oleoresin (HS33019023): From 2003-04 to 2013-14, outflow of corrinader oleoresins from India has surged by 36 times, from 1.9t valued ₹ 17.5L to 68.5t valued at inr 619.7L, highest among the studied years. Recently, exported quantity and corresponding trade value are growing almost equally i.e. 17.6% and 19.8%, respectively. Its average annual importation to India is 2.7t, and 0.2t valued at ₹ 10.9L was recorded in 2013-14 (Fig. 38).

Cumin oleoresin (HS33019024): Since 2003-04, exportation of Cumin oleoresin from India has increased by about six fold, from 6.3t valued at ₹ 69.6L to 36.4t valued at ₹ 443.8L in 2013-14 with highest export in 2012-13 i.e. 43.8t valued at ₹ 1054.2L. In past 11 years, its import to India was not observed except in 2010-11 (0.1t valued ₹ 3.1L).

Fennel oleoresin (HS33019025): In past 11 years, highest export of fennel oleoresin from India was in 2003-04 (38.8t valued at inr 376.2L), and 12.7t valued at ₹ 105.1L is recorded in 2013-14. No import has been observed in the same period.

Oleoresines of spices n.e.s., (HS33019029): From 1996-97 to 2013-14, exportation of this commodity group from India has increased by 29

times, from 161.6t valued at ₹ 1202.2L to 4700.1t valued at ₹ 46290.3L, and average annual export in last four years is 4065.5t valued at ₹ 41020.3L. Further, export is growing by 12.2% annually since last four years. Consistent importation of other oleoresins to India started from 2004-05 with 4.4t valued at ₹ 41.2L and by 2013-14, it reached up to 1582.1t valued at ₹ 26829.6L – highest in the studied duration. Besides, its import is increasing by 22.2% annually in recent years.

Mustard oil aroma/mustard oil aroma/e. oil (HS33019032): Its exportation from India has increased substantially since past 18 years, from 2.1t valued at ₹ 185.5L in 1996-97 to 34.9t valued at ₹ 2179.1L in 2013-14 with highest export in 2009-10 i.e. 104.1t valued at ₹ 3175.5. Notably, exported volume of mustard oil aroma is growing by 4.3% annually while corresponding trade value is soaring by 17.3%. Its inflow to India is occasional with average annual import of 2.1t, and 32.t valued at ₹ 14.9L is observed in 2013-14 (Fig. 39).

Flavouring essences, all types, including those for liquors obtain by cold absorpt or macr (HS33019041): In the period of 2003-04 to 2013-14, exportation of this plant based commodity group has doubled, from 26.9t valued at ₹ 595L to 64.3t valued at ₹ 204.8L. Its average annual importation to India is 7.3t, and 9.1t valued at 63.8L is recorded in 2013-14. Recently, its import is falling (CAGR: -9.9%).

Other concentrated of essential oils in fats/ fixed/wax obtained by cold absorption or maceration (HS33019049): In last 11 years, average annual exportation of this commodity from India is 79.7t equivalent to ₹ 806.2L. Highest export was observed in 2006-07 with 153.2t valued at ₹ 2367.2L, and 21.7t valued at ₹ 176.7L is recorded in 2013-14. Despite of growing export (CAGR: 2.1%)recently, corresponding trade value is falling -18/.7% annually. In contrast, its inflow to India has increased by about hundred times, from 1.5t valued at ₹ 4.9L in 2003-04 to 149.6t valued at ₹ 634.9L in 2013-14, highest in the studied period. In addition, imported volume is growing by 7.7% annually since last four years while corresponding trade value is soaring by 11.5%.

Flavoring essences, all types, including those for liquors (terpenic by-product) (HS330 19051): Average annual exportation of this commodity group from India is 43.4t amounting ₹ 305.1L. Since 2003-04, its export has lessened substantially, from 10.1t valued at ₹ 116.6L to 0.5t valued at 80.4L in 2013-14 with highest export in 2005-06 (205.6t valued at ₹ 738.6L). Notably, its export is declining (CAGR: -38.4%) while corresponding trade value is surging by 3.6% annually. Importation of this commodity group to India is occasional with average annual import of 0.9t, and 0.7t valued at ₹ 14.2L isobserved 2013-14.

Other terpenic by-product (HS33019059): From 2003-04 to 2013-14, exportation of Other terpenic by-product from India has increased by more than three times, from 11.4t valued at ₹ 99.6L to 37.1t valued at 651.7L with highest export in 2012-13 i.e. 113.6t valued at ₹ 570.5L. Its importation to India has also increased, from 22.4t valued at ₹ 29.6L to 74.5t valued at ₹ 148L in the same period with highest import in 2012-13 (127.4t valued at ₹ 675.9l). Remarkablyimport volume is declining by -9.1% annually since past four years while corresponding trade value is surging by 13.6%.

Aqueous distillates of essential oils, n.e.s. (HS33019060): Since last 11 years, average annual exportation of this commodity group from India is 9.7t with highest export in 2007-08 (39.6t valued at inr 68.8L) and 2008-09 (35.8t valued at inr 43.9L), and 18t valued at 32.3L is observed in 2013-14. In past nine years, its average annual importation to India is 2.3t, and 14.2t valued at ₹ 112L is registered in 2013-14.

Flavouring essences, all types, incl those for liquors (aqueous solutions) (HS33019071): Since 2003-04, outflow of this commodity has increased more than threefold, from 2.1t valued at ₹ 13.2L to 6.7t valued at ₹ 38.1L in 2013-14 with highest export in 2004-05 i.e. 130.3t valued at ₹ 257.5L. Recently, its export is declining.Importation of this commodity to India has increased by more than 15 times, from 0.8t valued at ₹ 9.4L to 12.3t valued at ₹ 78.6L in the period of 2003-04 to 2013-14.

Other aqueous solutions of essential oils (HS33019079): From 2003-04 to 2013-14, exportation of this commodity from India has halved, from 14.4t valued at ₹ 39.3L to 6.1t valued at ₹ 32.7L with highest export in 2008-09 i.e. 126.4t valued at ₹ 532.8L. In contrast, its importation to India has increased more than four times, from 2.6t valued at ₹ 35.9L to 16.2t valued at ₹ 162.6L, in the same period. Sihnce past four years, import is growing by 24.1% annually while corresponding trade value is surging by 38.2%.

Other concentrated of essential oils in fats/ fixed/wax like terpenic byproducts of deterpenation of essential oils aqueous distlts/ soltn esnl ol (HS33019090): Exportation of this commodity group have increased more than fourfold, from 49.1t valued at ₹ 355.7L to 219.3t valued at ₹ 2820.7L, in the period of 2003-04 to 2013-14 with highest export in 2009-10 i.e. 757.9t valued at ₹ 6004L. Trade data of past four years show that its export is declining by -20% annually. Importation of this commodity to India has increased about four times, from 65.8t valued at ₹ 430.3L in 2003-04 to 256.5t valued at ₹ 2322.9L in 2013-14. Besides, fall in the imported quantity (CAGR: -4.2%) observed in recent years corresponding trade value is growing by 6.1% annually.

CONCLUSION

In past 18 years, international trade in EORs has increased by more than three times in term of trade value, and it is presently at growing 7% annually. India is the largest exporter of essential oils, resinoids and terpenic by-products (HS3301) followed by USA, France, UK, China, Brazil, Argentina, and Indonesia while top destinations are USA, France, UK, Japan, Germany, Switzerland and China. In this group, essential oils of peppermint, orange and lemon are the most traded commodity worldwide. Essential oils of peppermint, spearmint, nutmeg, ginger, lemon grass, Palmarosa, pepper, celery seed, and Jasmine concrete and ambrette seed oil essence; and oleoresins of pepper, capsicum, turmeric, nutmeg, cardamom, fenugreek, ginger and celery seed are major exported commodity from India. India also substantially imports oils of sandalwood, patchouli, eucalyptus, orange, lemon and cedarwood.

ACKNOWLEDGEMENTS

We acknowledge Council of Scientific and Industrial Research (CSIR), New Delhi for financial support through networking project GENESIS (BSC0121) and CHEMBIO (BSC0203) at CSIR-CIMAP, Lucknow. We also acknowledge the SERB, Department of Science & Technology (DST), New Delhi and the Council of Science and Technology, Uttar Pradesh (CST, UP), Lucknow for financial support. Senior author (HT) acknowledge Indian Council of Medical Research (ICMR), New Delhi for awarding him a Senior Research Fellowship (File Ref. No. BIC/11/06/2014).

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