TURKISH OLIVE OIL: HOW CAN ITS GLOBAL COMPETITIVENESS BE INCREASED?

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Abstract

This study aims to examine the development of olive oil production and trade, analyze the competitiveness, and develop recommendations to increase competition. Although world olive oil production has followed a fluctuating course in the last two decades, it has been determined to be in an increasing trend. Approximately 3.3 million tons of olive oil are produced in the world every year. Türkiye ranks fifth in world olive oil production with a share of 7.12%. Although Türkiye's olive oil production has been increasing over the years, there are approximately 200-250 thousand tons of products every year. In 2021, world olive oil exports amounted to 8.58 billion dollars and imports to 8.75 billion dollars. Türkiye ranks sixth in the world regarding the amount and value of olive oil exports. Türkiye's olive oil export market is concentrated in the United States of America (USA) and European Union (EU) countries. In 2021, Türkiye's olive oil exports were 27.98% to the USA and 20.63% to EU countries. In the study, the competitiveness analysis of olive oil was calculated for the years 2010-2021, and Balassa's Revealed Comparative Advantage Index (RCA), Vollrath's Relative Export Advantage Index (RXA), and Laursen's Revealed Symmetric Comparative Advantage Index (RSCA) were used in the analysis. The average index values obtained for Türkiye are calculated as 2.06 for RCA, 2.09 for RXA, and 0.278 for RSCA. It was determined that although Türkiye's competitiveness in olive oil exports is at a low level, it has the potential to compete with rival countries. In the study, some suggestions were developed for Türkiye to increase its competitiveness. The main recommendations are to improve the quality of olive oil production by differentiating it through tools such as geographical indication registration and to liberalize trade by removing practices that restrict foreign trade (such as quotas and taxes) through agreements between countries.

Key words: olive oil, competitiveness analysis, revealed comparative advantage, relative export advantage, revealed symmetric comparative advantage, geographical indication

INTRODUCTION

Olive oil is one of the nutrients that play an essential role in human nutrition and maintaining a healthy life. Therefore, olive oil production and consumption are increasing yearly [14].

In 2020, 3.37 million tons of olive oil were produced worldwide. Türkiye ranks fourth in world olive oil production after Spain, Tunisia and Italy, with 240 thousand tons of olive oil production [8]. Moreover, Türkiye earns an average foreign trade contribution of 125 million dollars (olive oil exports value – olive oil imports value) every year through olive oil foreign trade.

Both internal and external factors influence international competition. Gain a continuous and stable competitive advantage in global markets, depending on production control, good organization and foreign trade policies [18]. In addition, there is a need for studies in which competitiveness analyses are conducted to reveal the current situation of countries in international trade and to determine the policies to be implemented in foreign trade [12]. This study aims to examine the development of olive oil production and trade, an essential product in Türkiye's agricultural production and foreign trade, and to develop suggestions to increase competition by analyzing competitiveness.

MATERIALS AND METHODS

Data on the main material of the study were obtained from the Food and Agriculture Organization of the United Nations and the

International Trade Center. In addition, sector reports prepared by relevant institutions and organizations and academic studies published in national and international fields were used. The production data analyzed within the scope of the study covers the period 2000-2020, and foreign trade data covers the period 2001-2021. The Olive oil data index was calculated, and the production, exports and imports development process over the years was analyzed.

In the competitiveness analysis of olive oil foreign trade, the Revealed Comparative Advantage Index (RCA) developed by Balassa [2], the Relative Export Advantage Index (RXA) developed by Vollrath [20] and the Revealed Symmetric Comparative Advantage Index (RSCA) developed by Laursen [15] were used.

Balassa's Revealed Comparative Advantage Index is shown in equation 1.

$$RCA_j^i = \frac{x_j^i / \Sigma x^i}{\Sigma x_j^w / \Sigma x^w} \qquad (1)$$

where:
RCA_j^i is the Revealed Comparative Advantage Index of country i in product j,
x_j^i: the export value of product j of country i,
Σx^i: the total export value of country i,
Σx_j^w: the total export value of world product j,
Σx^w: the total export value of the world.
Vollrath's Relative Export Advantage Index is shown in equation 2.

$$RXA_j^i = \frac{x_j^i / \Sigma x^i}{\Sigma x_j^w / \Sigma x^w} \qquad (2)$$

where:
RXA_j^i: the Relative Export Advantage Index of country i in product j,
x_j^i: the export value of product j of country i,
Σx^i: the total export value of country I,
Σx_j^w: subtracting the export value of product j of country i from the total export value of product j of the world,
Σx^w: subtracting the export value of country i from the total world export value.

RCA and RXA values are close to each other. This is because, when calculating the RXA value, the double calculation is avoided by subtracting the export values of the relevant country and product from the total product and total country export values [12].
Laursen's Revealed Symmetric Comparative Advantage Index is shown in equation 3.

$$RSCA_j^i = \frac{(RCA - 1)}{(RCA + 1)} \qquad (3)$$

where:
$RSCA_j^i$: the Revealed Symmetric Comparative Advantage Index of country i in product j,
RCA is the countries' Revealed Comparative Advantage Index for the relevant product.
Countries with an RCA value in the range of 0-1 have no comparative advantage and comparative disadvantage, countries with an RCA value in the range of 1-2 have a weak comparative advantage, countries with an RCA value in the range of 2-4 have a moderate comparative advantage and countries with an RCA value greater than 4 have a high degree of comparative advantage [10]. Countries with an RXA value greater than 1 have a competitive advantage for the relevant product, while countries with an RXA value less than 1 have a competitive disadvantage for the relevant product [9]. RSCA value takes a value between -1 and 1. Countries with a positive RSCA value have a competitive advantage for the related product, while countries with a negative RSCA value have a competitive disadvantage for the related product [15].

RESULTS AND DISCUSSIONS

Developments in olive oil production and trade
When the developments in olive oil production in the world between 2000 and 2020 are evaluated, olive oil production, which was 2 million 731 thousand tons on average between 2000 and 2004, increased by 23.55% to 3 million 374 thousand tons in the

period under review. Spain ranks first in world production with a share of 40.20%. Spain was followed by Tunisia (11.06%), Italy (9.81%), Greece (9.13%) and Türkiye (7.12%). During the period under review, olive oil production increased 3.52 times in Algeria, 2.99 times in Portugal, 2.97 times in Tunisia, 2.93 times in Morocco and 1.89 times in Türkiye. It decreased by 45.77% in Italy, 13.89% in Greece and 9.22% in Syria (Table 1).

Table 1. Development of olive oil production in the world

Countries	2000-2004		2005-2009	2010-2014	2015-2019	2020		Index (2000-2004 = 100)
	Tons	Percent (%)	Tons	Tons	Tons	Tons	Percent (%)	
Spain	1,133,187	41.50	1,106,753	1,244,091	1,366,155	1,356,411	40.20	119.70
Tunisia	125,400	4.59	180,000	169,560	229,720	373,100	11.06	297.53
Italy	610,178	22.34	594,658	466,613	364,995	330,879	9.81	54.23
Greece	357,693	13.10	344,682	306,110	318,250	308,000	9.13	86.11
Türkiye	127,000	4.65	127,960	180,160	207,320	240,100	7.12	189.06
Morocco	56,000	2.05	77,320	131,120	156,640	164,600	4.88	293.93
Syrian Arab Republic	152,250	5.58	159,658	164,432	143,543	138,217	4.10	90.78
Algeria	32,218	1.18	34,981	51,420	82,480	113,600	3.37	352.60
Portugal	35,708	1.31	49,170	70,153	119,066	107,000	3.17	299.66
Others	101,113	3.70	116,304	186,683	255,919	241,975	7.17	239.31
World	2,730,746	100.00	2,791,485	2,970,342	3,244,088	3,373,882	100.00	123.55

Source: [8].

World olive oil exports increased from an average of 1 million 195 thousand tons between 2001 and 2005 to 2 million 187 thousand tons in 2021. During this period, olive oil exports increased by 82.93%. In the period under review (2001-2005), olive oil export value increased by 148.37% from 3 billion 454 million dollars to 8 billion 580 million dollars. Regarding olive oil export value, Spain ranked first with a share of 45.17%. It is followed by Italy (20.22%), Portugal (9.67%), Greece (7.83%), Tunisia (6.93%) and Türkiye (1.98%). Türkiye's olive oil exports decreased by 17.86% during the period analyzed. Türkiye's share of total olive oil exports decreased from 5.62% in 2001-2005 to 2.52% in 2021. The export value increased by 9.95% between the same periods (Table 2).

Table 2. Export quantities and values of leading olive oil exporting countries

Countries	2001-2005		2006-2010	2011-2015	2016-2020	2021		Index (2001-2005 = 100)
	Export Quantity (Tons)							
	Tons	Percent (%)	Tons	Tons	Tons	Tons	Percent (%)	
Spain	559,867	46.84	610,131	822,597	993,212	1,061,871	48.56	189.66
Italy	297,013	24.85	305,756	364,073	324,389	343,979	15.73	115.81
Portugal	20,588	1.72	38,968	105,913	158,650	216,209	9.89	1,050.17
Tunisia	95,536	7.99	152,173	154,745	190,645	180,517	8.26	188.95
Greece	87,873	7.35	97,481	128,124	143,336	157,556	7.21	179.30
Türkiye	67,191	5.62	29,991	32,875	48,284	55,194	2.52	82.14
Syrian Arab Republic	20,211	1.69	42,712	16,540	45,547	46,408	2.12	229.62
Argentina	7,627	0.64	15,936	20,812	23,534	26,323	1.20	345.13
USA	2,728	0.23	6,440	10,212	11,600	12,948	0.59	474.63
Others	36,667	3.07	56,829	155,939	88,509	85,526	3.91	233.25
World	1,195,302	100.00	1,356,419	1,811,831	2,027,705	2,186,531	100.00	182.93
	Export Value							
Countries	Thousand dollars	Percent (%)	Thousand dollars	Thousand dollars	Thousand dollars	Thousand dollars	Percent (%)	Index (2001-2005 = 100)
Spain	1,478,373	42.80	2,398,519	2,849,813	3,550,671	3,875,172	45.17	262.12
Italy	1,005,144	29.10	1,500,502	1,646,703	1,625,135	1,734,505	20.22	172.56
Portugal	67,014	1.94	178,899	413,565	607,912	829,836	9.67	1,238.30
Greece	253,642	7.34	395,999	501,128	567,235	671,964	7.83	264.93
Tunisia	240,739	6.97	499,255	480,033	574,506	594,865	6.93	247.10
Türkiye	154,766	4.48	109,081	114,061	156,430	170,158	1.98	109.95
Syrian Arab Republic	104,477	3.02	145,624	44,328	113,365	125,881	1.47	120.49
Argentina	24,799	0.72	58,768	71,259	82,752	97,459	1.14	393.00
France	17,826	0.52	36,661	46,306	60,424	70,049	0.82	392.96
Others	107,681	3.12	224,995	329,420	401,962	409,889	4.78	380.65
World	3,454,461	100.00	5,548,303	6,496,616	7,740,392	8,579,778	100.00	248.37

Source: [11].

World olive oil imports increased from an average of 1 million 312 thousand tons between 2001 and 2005 to 2 million 47 thousand tons in 2021. In the same period, olive oil imports increased by 56.07%. The value of olive oil imports increased by 144.09% from 3 billion 584 million dollars to 8 billion 748 million dollars. Italy ranked first in olive oil import value with a 21.53% share. It is followed by the USA (17.08%), France (6.52%), Spain (6.40%), Brazil (5.03%) and Portugal (4.97%). In the analyzed period, olive oil import value increased 5.88 times in Brazil, 4.92 times in Spain, 3.11 times in Portugal, 2.68 times in Germany and 2.47 times in the USA (Table 3).

Table 3. Import quantities and values of leading olive oil importing countries

Countries	2001-2005		2006-2010	2011-2015	2016-2020	2021		Index (2001-2005 = 100)
	Export Quantity							
	Tons	Percent (%)	Tons	Tons	Tons	Tons	Percent (%)	
Italy	510,517	38.92	497,469	557,624	546,265	539,769	26.37	105.73
USA	202,917	15.47	250,329	291,990	338,934	365,916	17.87	180.33
France	96,710	7.37	108,839	115,023	124,930	137,909	6.74	142.60
Portugal	55,007	4.19	73,574	102,270	114,085	134,202	6.56	243.97
Brazil	23,613	1.80	40,567	67,544	79,348	97,210	4.75	411.68
Germany	43,632	3.33	56,692	67,556	70,872	81,733	3.99	187.32
United Kingdom	57,619	4.39	62,413	68,609	72,887	61,990	3.03	107.59
Japan	31,317	2.39	32,112	49,191	61,377	59,141	2.89	188.84
Canada	26,524	2.02	33,340	38,663	47,785	51,222	2.50	193.12
Others	263,866	20.12	374,384	516,607	595,190	518,157	25.31	196.37
World	1,311,724	100.00	1,529,718	1,763,552	2,051,672	2,047,249	100.00	156.07
	Import Value							
Countries	Thousand dollars	Percent (%)	Thousand dollars	Thousand dollars	Thousand dollars	Thousand dollars	Percent (%)	Index (2001-2005 = 100)
Italy	1,267,592	35.37	1,686,205	1,718,311	1,811,044	1,883,407	21.53	148.58
USA	605,022	16.88	971,454	1,084,760	1,398,968	1,494,276	17.08	246.98
France	266,278	7.43	435,685	436,942	526,392	570,324	6.52	214.18
Spain	113,699	3.17	198,080	288,000	444,388	559,621	6.40	492.20
Brazil	74,858	2.09	200,384	328,698	374,408	440,293	5.03	588.17
Portugal	139,803	3.90	246,702	303,910	359,727	434,923	4.97	311.10
Germany	147,793	4.12	278,889	297,121	343,319	395,839	4.52	267.83
Japan	120,680	3.37	176,412	248,681	301,625	277,759	3.17	230.16
United Kingdom	139,856	3.90	254,997	240,208	266,244	234,184	2.68	167.45
Others	708,531	19.77	1,395,115	1,765,949	2,145,287	2,457,865	28.09	346.90
World	3,584,112	100.00	5,843,923	6,712,579	7,971,402	8,748,491	100.00	244.09

Source: [11].

Türkiye's olive oil exports were 170 million 158 thousand dollars in 2021 and these exports were realized at 27.98% to the USA, 15.52% to Spain and 7.53% to Japan. These countries account for about half of Türkiye's total olive oil exports (51.03%) (Table 4).

Table 4. The main countries to which Türkiye exports olive oil

Countries	2001-2005		2006-2010	2011-2015	2016-2020	2021		Index (2001-2005 = 100)
	Thousand dollars	Percent (%)	Thousand dollars	Thousand dollars	Thousand dollars	Thousand dollars	Percent (%)	
USA	26,879	17.37	24,027	25,971	48,711	47,607	27.98	177.12
Spain	26,186	16.92	3,974	13,290	28,913	26,401	15.52	100.82
Japan	1,551	1.00	7,934	9,731	7,430	12,805	7.53	825.81
Israel	693	0.45	635	167	2,675	9,652	5.67	1,393.59
Saudi Arabia	4,384	2.83	6,367	12,797	16,642	9,240	5.43	210.79
United Arab Emirates	1,755	1.13	3,153	2,857	2,996	7,205	4.23	410.45
Iran	293	0.19	909	5,208	4,538	6,623	3.89	2,258.87
Germany	645	0.42	1,651	2,227	2,506	4,303	2.53	666.72
Jordan	77	0.05	130	19	221	3,161	1.86	2,435.29
Others	92,304	59.64	60,301	41,794	41,797	43,156	25.36	46.75
World	154,766	100.00	109,081	114,061	156,430	170,158	100.00	109.95

Source: [11].

Türkiye's olive oil imports were 67 million 556 thousand dollars in 2021 and almost all of these imports were from Syria. Syria's share in olive oil imports is 95.90% (Table 5). Türkiye's olive oil imports have increased in the last three years (2019-2021). Although

imports have risen recently, Türkiye's olive oil export price per kg was higher than its import price. In other words, Türkiye exports olive oil at high prices and imports it at low prices.

Table 5. The main countries to which Türkiye import olive oil

| Countries	2001-2005		2006-2010	2011-2015	2016-2020	2021		Index (2011-2015 = 100)
	Thousand dollars	Percent (%)	Thousand dollars	Thousand dollars	Thousand dollars	Thousand dollars	Percent (%)	
Syrian Arab Republic	84	7.28	-	196	26,426	64,789	95.90	245.17
Spain	917	79.81	-	304	337	1,484	2.20	440.88
Tunisia	-	0.00	-	1,692	1,009	317	0.47	31.41
Italy	2	0.16	-	84	125	224	0.33	178.63
Cyprus	79	6.84	4	54	-	203	0.30	375.93
France	-	0.00	-	30	39	133	0.20	337.56
Germany	-	0.00	-	1	88	105	0.16	119.05
Greece	-	0.00	-	3	92	98	0.15	106.99
United Kingdom	-	0.00	-	1	4	75	0.11	2,083.33
Others	68	5.92	33	469	557	127	0.19	22.78
World	1,149	100.00	37	2,835	28,678	67,556	100.00	235.57

Source: [11].
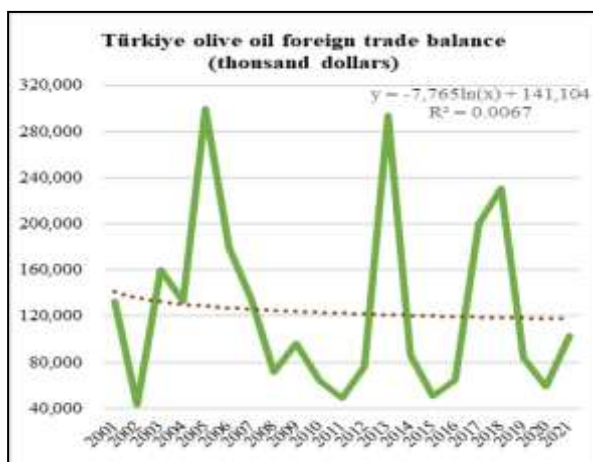
Fig. 1. Türkiye olive oil foreign trade balance (thousand dollars)
Source: Own calculation from [11] data.

Türkiye's foreign trade balance in olive oil has fluctuated over the years. Türkiye had a foreign trade surplus of 132 million 620 thousand dollars in 2001. In 2021, it decreased by 22.63% and a foreign trade surplus of 102 million 602 thousand dollars was realized. In the analyzed period, the foreign trade surplus ranged between 42 million and 300 million dollars, averaging 119 million dollars (Fig 1).

Competitiveness analysis in olive oil

According to the RCA index, Tunisia, Greece, Spain, Portugal and Italy have had a high comparative advantage. The average RCA values of these countries were calculated as 84.01, 39.07, 26.28, 20.46 and 8.28, respectively. It was determined that Argentina and Türkiye have a moderate comparative advantage, while France does not have any comparative advantage (Table 6).

Table 6. Revealed comparative advantage index (RCA)

RCA	Tunisia	Greece	Spain	Portugal	Italy	Argentina	Türkiye	France
2010	53.96	34.03	28.73	12.47	9.41	1.81	1.62	0.20
2011	50.82	36.38	27.37	15.95	9.90	2.72	1.16	0.22
2012	72.46	39.03	27.43	19.11	10.13	2.08	1.65	0.23
2013	82.84	50.71	23.53	20.19	9.30	2.88	5.11	0.22
2014	45.43	25.78	30.62	20.69	8.70	1.71	1.43	0.24
2015	150.61	55.49	23.68	19.55	7.84	4.43	0.93	0.26
2016	63.89	50.10	26.75	17.73	7.92	2.22	1.05	0.24
2017	61.08	36.07	28.38	19.49	7.02	5.60	2.72	0.25
2018	116.05	40.18	23.82	23.42	6.95	2.78	3.28	0.25
2019	82.72	27.57	25.88	24.29	7.30	2.68	2.11	0.31
2020	135.00	36.84	23.66	24.20	7.45	2.51	1.75	0.30
2021	93.30	36.69	25.51	28.42	7.43	3.23	1.95	0.32
Average	84.01	39.07	26.28	20.46	8.28	2.89	2.06	0.25

Source: Own calculation.

According to the RXA index, Tunisia, Spain, Greece, Portugal and Italy were found to have a comparative advantage. The average RXA values of these countries were calculated as 91.43, 47.50, 42.27, 22.01 and 10.58, respectively. France was found to be at a

competitive disadvantage in olive oil exports (Table 7).

Table 7. Relative export advantage index (RXA)

RXA	Tunisia	Spain	Greece	Portugal	Italy	Argentina	Türkiye	France
2010	57.26	53.42	36.22	12.96	12.66	1.82	1.62	0.20
2011	53.44	49.08	38.92	16.78	13.46	2.74	1.16	0.21
2012	77.59	47.63	42.10	20.27	13.62	2.09	1.66	0.22
2013	89.47	37.98	56.08	21.58	12.16	2.90	5.30	0.21
2014	47.30	62.57	27.06	22.17	11.18	1.71	1.44	0.23
2015	172.79	38.76	61.25	20.85	9.75	4.48	0.93	0.25
2016	67.51	50.21	54.80	18.83	9.99	2.23	1.05	0.23
2017	64.20	56.16	38.54	20.86	8.55	5.69	2.77	0.24
2018	127.87	40.78	43.68	25.63	8.42	2.79	3.34	0.24
2019	88.51	47.55	29.14	26.51	8.97	2.70	2.13	0.30
2020	151.02	40.21	39.69	26.36	9.19	2.52	1.76	0.29
2021	100.17	45.69	39.72	31.36	9.06	3.25	1.97	0.31
Average	91.43	47.50	42.27	22.01	10.58	2.91	2.09	0.25

Source: Own calculation.

According to the RSCA index, Tunisia, Greece, Portugal, Spain, Italy, Argentina and Türkiye were determined to have a competitive advantage in olive oil exports. France, on the other hand, was found to have a competitive disadvantage (Table 8).

Table 8. Revealed symmetric comparative advantage index (RSCA)

RSCA	Tunisia	Greece	Portugal	Spain	Italy	Argentina	Türkiye	France
2010	0.964	0.943	0.852	0.933	0.808	0.289	0.236	-0.664
2011	0.961	0.946	0.882	0.930	0.817	0.463	0.075	-0.641
2012	0.973	0.950	0.901	0.930	0.820	0.351	0.245	-0.627
2013	0.976	0.961	0.906	0.918	0.806	0.484	0.673	-0.642
2014	0.957	0.925	0.908	0.937	0.794	0.262	0.178	-0.613
2015	0.987	0.965	0.903	0.919	0.774	0.631	-0.035	-0.590
2016	0.969	0.961	0.893	0.928	0.776	0.379	0.025	-0.615
2017	0.968	0.946	0.902	0.932	0.751	0.697	0.463	-0.605
2018	0.983	0.951	0.918	0.919	0.749	0.470	0.532	-0.605
2019	0.976	0.930	0.921	0.926	0.759	0.457	0.356	-0.529
2020	0.985	0.947	0.921	0.919	0.763	0.430	0.273	-0.541
2021	0.979	0.947	0.932	0.925	0.763	0.527	0.321	-0.519
Average	0.973	0.948	0.903	0.926	0.782	0.453	0.278	-0.599

Source: Own calculation.

In a study [5], Türkiye was superior to Morocco according to the RCA and RXA indices and Portugal according to the RXA index. Except for these countries, Türkiye's international competitiveness was significantly lower than other countries.

Another study [3] found that Türkiye does not have an international competitive advantage over the leading countries in olive oil production and exports.

A study determined that countries such as Tunisia, the USA, Canada, Australia, Japan and Brazil have a higher competitive advantage than EU countries and Türkiye [18].

The EU imposes taxes and quotas on olive oil imports from some countries outside the community to protect its olive oil-producing member countries. Türkiye is one of these countries and is subjected to quotas and has to pay taxes on olive oil exports to the EU market. Therefore, Türkiye's olive oil competitiveness is lower than other countries.

Geographical indication in olive oil

Geographical indications highlight local products and increase their brand value. In addition, it creates new employment areas for producers and increases their incomes. People living and producing in rural regions have introduced the concept of geographical indication to benefit from these opportunities [13]. Countries differentiate and determine quality through branding to increase their competitiveness. One way to achieve this differentiation and quality is to trade products with geographical indications.

In addition, a geographical indication is an important tool for creating a market by providing product differentiation and competitive advantage [16] [6]. While

defining geographical indications, the place of production, processing methods, microbiological, chemical and physical characteristics that contribute to the product's sensory and distinctive features are considered [4]. These definitions are as follows. Protected Designation of Origin-PDO: The products covered by this geographical indication have a particular production scheme and must be produced under appropriate environmental conditions without changing this production flow. It is possible to make it all over the world with the proper production scheme [1]. Protected Geographical Indication-PGI: In the products that receive this geographical indication, there is a geographical situation that affects the microbiological, chemical, physical, aromatic and sensory properties of the products. These products can only be produced in that region [1]. In addition, these two geographical indications are also included in the quality guarantee certificates in the EU and increase competition in marketing [17].

In 12 different provinces of Türkiye, 11 different olive oils have been registered with the PGI, 6 olive oils have been registered with the PDO and a total of 17 different olive oils have received geographical indications from the Turkish Patent and Trademark Office (Table 9).

Table 9. Olive oils with geographical indication registered in Türkiye

Product name	Provinces	Registration date	Geographical label
Ayvalık olive oil	Balıkesir	2007	PDO
Nizip olive oil	Gaziantep	2012	PGI
Milas olive oil	Muğla	2016	PDO
Edremit olive oil	Balıkesir	2017	PDO
Mut olive oil	Mersin	2018	PDO
Aydın Memecik olive oil	Aydın	2020	PDO
Burhaniye olive oil	Balıkesir	2020	PDO
Ödemiş Çekişte olive oil	İzmir	2020	PDO
Geyikli olive oil	Çanakkale	2021	PDO
Tarsus Sarıulak olive oil	Mersin	2021	PDO
Akhisar Domat olive oil	Manisa	2022	PGI
Akhisar Uslu olive oil	Manisa	2022	PGI
Bayramiç olive oil	Balıkesir	2022	PDO
Ceyhan olive oil	Adana	2022	PGI
Derik Halkalı olive oil	Mardin	2022	PDO
Kilis olive oil	Kilis	2022	PGI
Osmaniye olive oil	Osmaniye	2023	PGI

PDO: Protected Designation of Origin
PGI: Protected Geographical Indication
Source [19].

In addition, Milas Olive Oil has been registered by the European Union. Registration applications were made for Kilis Olive Oil, Aydın Memecik Olive Oil and Edremit Olive Oil [7].

In the European Union, there are 138 extra virgin olive oils registered with the PDO and PGI from Italy (50), Spain (33), Greece (31), France (7), Croatia (7) and Portugal (6) (Table 10). It was determined that Türkiye lags behind Italy, Spain and Greece regarding the number of olive oils that have received geographic indication. This situation reduces the competitiveness of Türkiye in olive oil exports.

Table 10. Olive oils with geographical indication registered in European Community

Countries	PDO	PGI	Total
Italy	42	8	50
Spain	31	2	33
Greece	19	12	31
France	9	-	9
Croatia	6	-	6
Portugal	6	-	6
Slovenia	1	1	2
Hungary	-	1	1
EU Total	114	24	138

Source [7].

CONCLUSIONS

To increase Türkiye's competitiveness and exports in olive oil production, recommendations can be developed under the following headings;

Marketing Strategy: Turkish olive oil producers need to better promote their products in both domestic and international markets. Specifically, Turkish olive oil brands should develop a marketing strategy emphasizing the advantages they offer regarding quality and health.

Quality Control: Türkiye can potentially compete with other countries in producing high-quality olive oil. However, quality control should be tightened during production, and the technology used in production should be modernized.

R&D and Innovation: Turkish olive oil producers should invest more in R&D and innovation. Especially by optimizing the production process with new technologies, they can reduce costs and increase

competitiveness. Geographical Indications: Olive oils produced in certain regions in Türkiye are protected by geographical indications. More effective use of these geographical indications can help Turkish olive oil producers build consumer trust in the quality and characteristics of their products.

Participation in International Fairs and Events: Turkish olive oil producers can participate more actively in international fairs and events. These events can provide opportunities for product promotion and export. Support for Exporters: Necessary financial and logistical support should be provided for Turkish olive oil producers to export their products. Such support can increase their export capacity and facilitate the delivery of products to foreign markets.

Bilateral Cooperation: It is recommended to eliminate restrictions on international trade, such as taxes and quotas, through agreements between countries, thus making trade more liberal. This will allow Türkiye to compete with other countries in olive oil exports and increase its revenue.

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