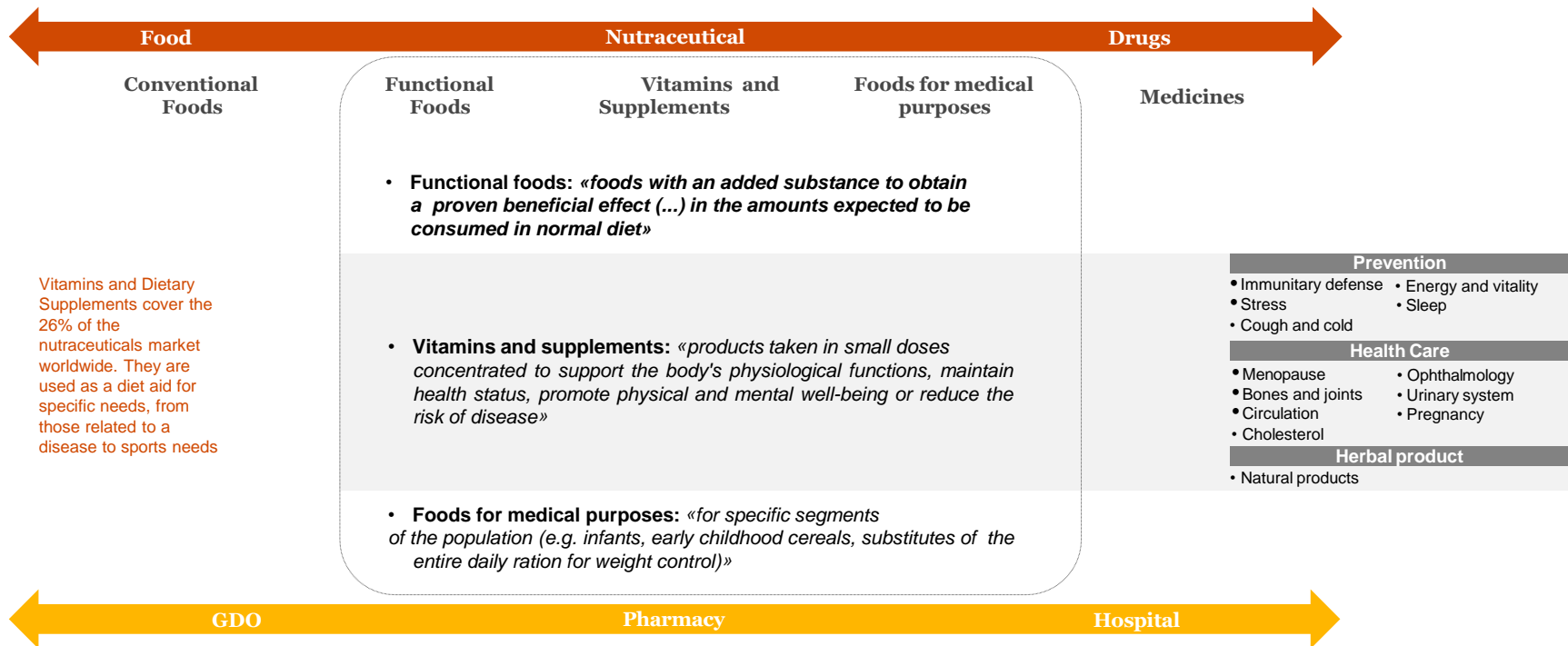


# **Dietary supplements; futuurology**

**A. kebriaezadeh 2024**



# Global view

**1. Supplement in the market:**

55600 products

**2. New products:**

5560 annually

**3. Market value:**

\$163.9 billion in 2022,  
stimated \$327.4 billion for 2030

**4. CAGR:**

8.6%

**5. The largest market place/product:**

US/vitamins

**6. The fastest growing place/category:**

Asian pacific/ proteins

**7. The most reason to pay:**

Weight management (30.6%)

**8. The most current dosage form:**

Tablet (33.6%)

# Iran view

**1. Supplement in the market:**

9932 products

**2. New products:**

902 annually

**3. Market value:**

74.8 thousand billion rials in 1400,  
8823 thousand billion rials for 1410

**4. CAGR:**

54.29% value, 13.04% volume

**5. The largest market company/product:**

Dana/multivitamins-mineral

**6. The fastest growing category:**

Supplement for men

**7. The most reason to pay:**

Iron deficiency

**8. The most current dosage form:**

Tablet

# Trends in market

## **1. Immune Support Dietary Supplements**

- post-pandemic world, supplements rich in vitamin C, vitamin D, zinc, and magnesium, probiotic supplements

## **2. Sleep Support Dietary Supplements**

- individual or combination of magnesium, melatonin, and ...

## **3. CBD Dietary Supplements**

- With mood-boosting vitamins like B12 and vitamin D

## **4. Collagen Dietary Supplements**

- support skin and joints health

## **5. Vegan Dietary Supplements**

- Vitamin B12, iron, calcium, and omega-3 fatty acids

## **6. Gummies**

- Enjoyable to consume, easy absorption

## **7. Mushroom Supplements**

- immunity boosting and anti-inflammatory properties

## **8. Eye Health Supplements**

- Digital age, rich in antioxidants like lutein and zeaxanthin

## **9. Bone Health Supplements**

- Staple supplement trends, rich in Calcium and Vitamin D

## **10. Supplements for Libido & Sexual Wellness**

- societal shift towards open discussions around sexual health

# Trends in market

## **1. Weight management**

- Obesity and diabetes are particularly prevalent across the Middle East

## **2. Skin, hair and nails**

- Anti-aging, anti-cellulite and anti-acne, prevent hair loss

## **3. Fertility aids**

- Family is a huge part of local culture

## **4. Immunity boosters**

- Coronavirus pandemic, vit C, vit D, zinc

## **5. Probiotic supplements**

- Probiotic supplements have seen a slight decline in sales

## **6. Eye Health Supplements**

- Digital age, rich in antioxidants like lutein and zeaxanthin

**Table 1. Established Toxicant Limits in Supplements (mcg/day).**

<b>Toxic Element</b>	<b>U.S. California Proposition 65, [883] and Environmental Protection Agency [102]</b>	<b>European Union [103,104,105]</b>	<b>Australia [106]</b>	<b>World Health Organization [85,103]</b>	<b>Gestational Limits [107,108]</b>
Mercury (Hg)	2	4.2	2.4 Inorganic Hg 0.96 Methyl Hg	1.37 (Methyl Hg in children)	0.6 for Methyl Hg
Lead	15	21	NE	21	Concern at low levels. No level yet established as acceptable
Cadmium	4.1	6	15	6	NE
Arsenic	10	13.0	NE	12.85	NE
Aluminum	7,000	4,286	12,000	NE	NE
Barium	1,200	NE	NE	NE	NE
Antimony	2.8	36	NE	NE	NE
Thallium	70	NE	NE	NE	NE
Tin	200	NE	NE	NE	NE
Cesium	NE	NE	NE	NE	NE

NE – Not established.

European/WHO/Australian levels were established by convention as representing 10% of the daily total toxicant intake after conversion of values expressed in mg/kg/week for an average adult weight of 60 kg.

doi:10.1371/journal.pone.0049676.t001

Genius SJ, Schwalfenberg G, Siy AKJ, Rodushkin I (2012) Toxic Element Contamination of Natural Health Products and Pharmaceutical Preparations. PLOS ONE 7(11): e49676. <https://doi.org/10.1371/journal.pone.0049676>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0049676>

**Table 2. Overall Results of Toxic Element Contamination\*\*\*.**

Element in mcg	Mercury	Lead	Cadmium	Arsenic	Aluminum	Barium	Antimony	Thallium	Tin	Cesium
Allowable limit/day* (micrograms)	2	15	4.1	10	7,000	1,400	2.8	70	200	NE
<b>Natural Health Products (NHPs) – Overall</b>										
(N) tested	121	121	121	100	121	121	72	65	65	65
Average daily exposure (mean)	0.366	1.49	0.199	21.7	573	59.3	0.126	0.0384	0.608	0.167
Standard Deviation	3.80	5.33	0.803	202	1,590	138	0.372	0.0803	1.88	0.400
Highest daily exposure in single sample	41.8	51.4	6.81	2,020	12,900	894	2.32	0.354	13.2	2.34
Average annual exposure	134	545	72.9	7,910	209,000	21,700	45.9	14.0	222	61.0
Number exceeding daily limit	1	2	2	5	2	0	0	0	0	N/A
Percent with detectable contaminant*	31.4	51.2	33.1	57	82.6	81.8	37.5	64.6	67.7	66.1
<b>Pharmaceuticals – Overall (n = 49)</b>										
Average daily exposure (mean)	0.0007	0.0237	0.0035	0.0069	336	0.200	0.012	0	0.024	0.0026
Standard Deviation	0.0007	0.033	0.0098	0.01	104	0.405	0.035	0	0.042	0.103
Highest daily exposure in single sample	0.0023	0.147	0.0241	0.0461	381	1.93	0.072	0.00	0.117	0.0694
Average annual exposure	0.256	8.66	1.28	2.52	123,000	73.2	4.38	0	8.77	0.950
Number exceeding daily limit	0	0	0	0	0	0	0	0	0	N/A
Percent with detectable contaminant*	91.8	89.8	89.8	93.8	100	100	91.8	0	100	89.8
<b>North American NHPs excluding Chinese, Ayurvedic and marine products</b>										
(N) tested	91	91	91	72	91	91	49	44	44	44
Average daily exposure (mean)	0.0146	0.362	0.0918	0.782	160	41.3	0.0853	0.0094	0.090	0.0411
Standard Deviation	0.0781	1.01	0.334	3.16	337	123	0.340	0.0122	0.165	0.112
Highest daily exposure in single sample	0.714	6.54	1.86	23.9	2,000	894	2.32	0.039	0.40	0.683
Average annual exposure	5.33	132	33.5	286	58,600	15,100	31.2	3.43	32.9	15.0
Number exceeding daily limit	0	0	1	2	0	0	0	0	0	0
Percent with detectable contaminant**	25.3	39.6	25.3	51.4	71	69.2	32.6	61.4	54.5	61.4

Category of NHP indicates classification of product in store or company where purchased. This does not necessarily indicate where source materials for the NHPs are initially manufactured or derived.

\*Limits from U.S. California Proposition 65, [85] and Environmental Protection Agency [102] as per Table 2.

\*\*The limit of detection will vary between analytical laboratories and may thus influence the percent with detectable contaminants when levels are at low concentrations.

\*\*\*Tables 3–6 should be interpreted together and in context as there were single outliers (such as the Hg level in one Chinese NHP) that radically skewed the mean and standard deviation.

doi:10.1371/journal.pone.0049676.t002

Genuis SJ, Schwalfenberg G, Siy AKJ, Rodushkin I (2012) Toxic Element Contamination of Natural Health Products and Pharmaceutical Preparations. PLOS ONE 7(11): e49676. <https://doi.org/10.1371/journal.pone.0049676>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0049676>



# CAM from the perspective of the WHO

(World Health Organization)

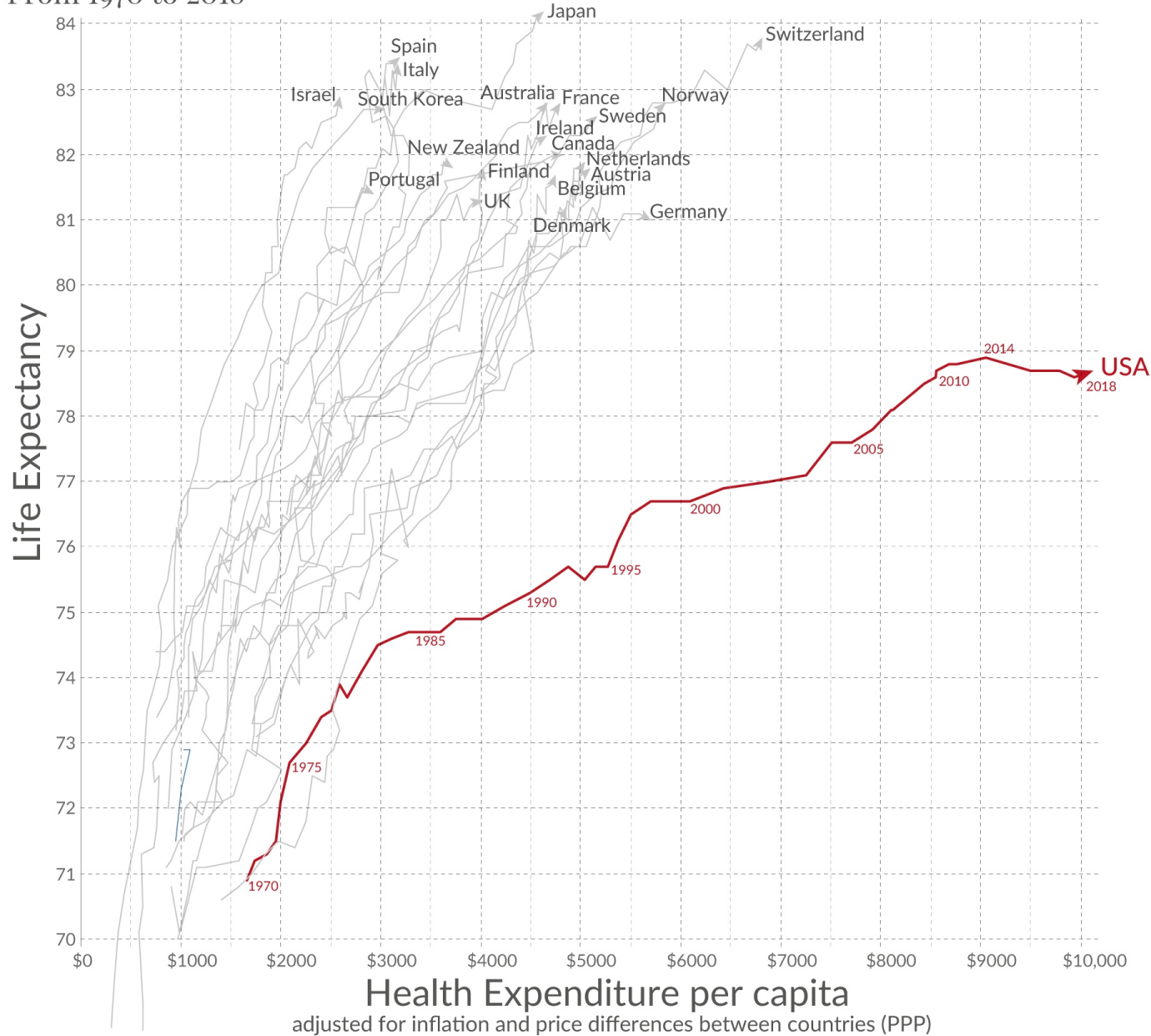
- Although CAM has a great influence on health care practices, there is wide variation from **country to country** in **policies**, **laws**, and regulations governing the **safety**, **quality**, and **efficacy** of CAM therapies.
- Many consumers use **herbal products** to treat themselves often **without a health practitioner's** knowledge or advice.
- Consumers and practitioner may not be adequately informed about **potential adverse effects** , drug **interaction** and **how to use** herbal medicines safely. **lack of regulations** on quality standards and evaluation for **safety and efficacy** of those products may cause problems resulting in **the marketing of unsafe** or **ineffective** CAM products. (3)

# Precautions of CAM Prescription in Children

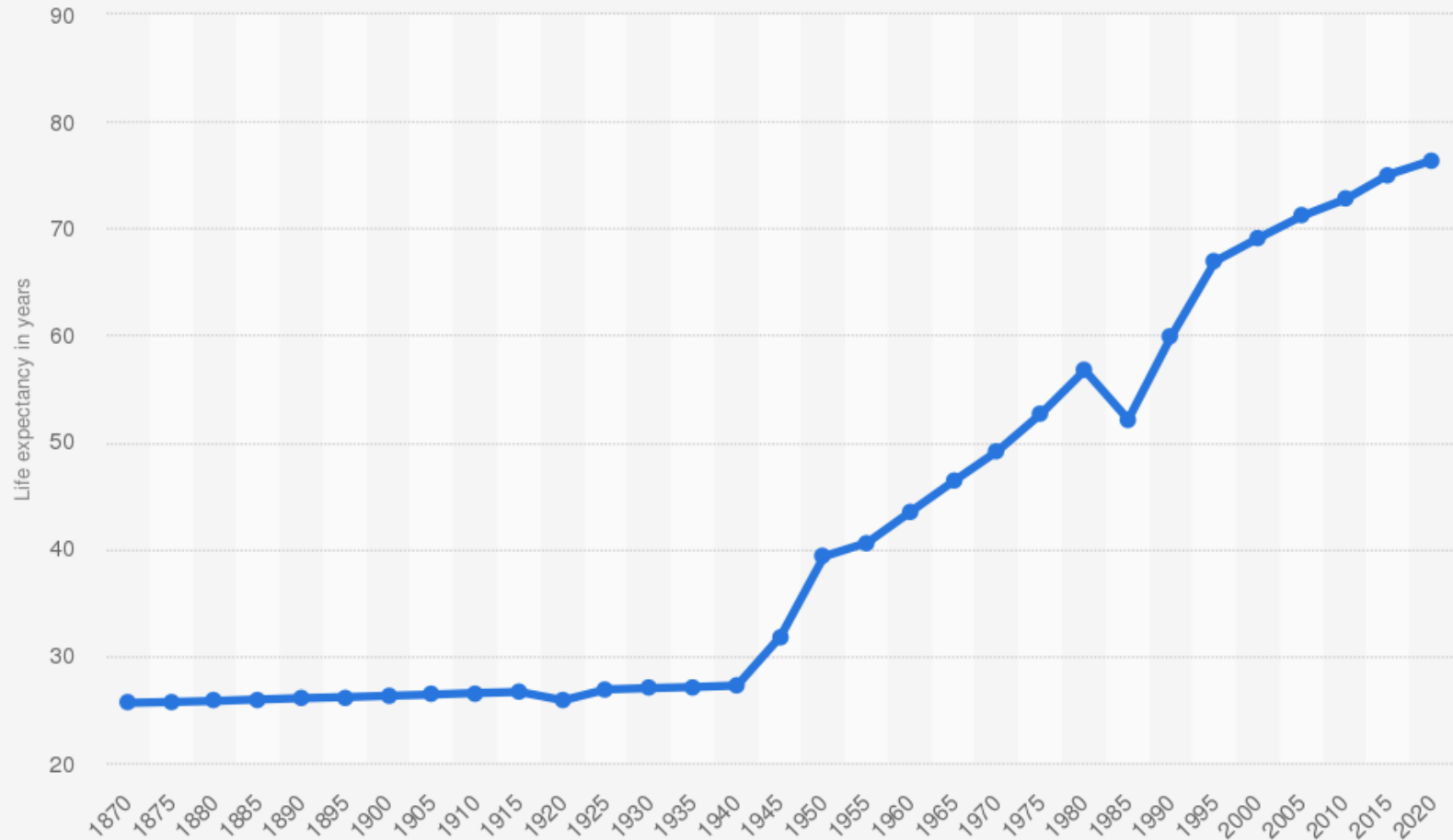


# Life expectancy vs. health expenditure

From 1970 to 2018



## Life expectancy (from birth) in Iran from 1870 to 2020\*

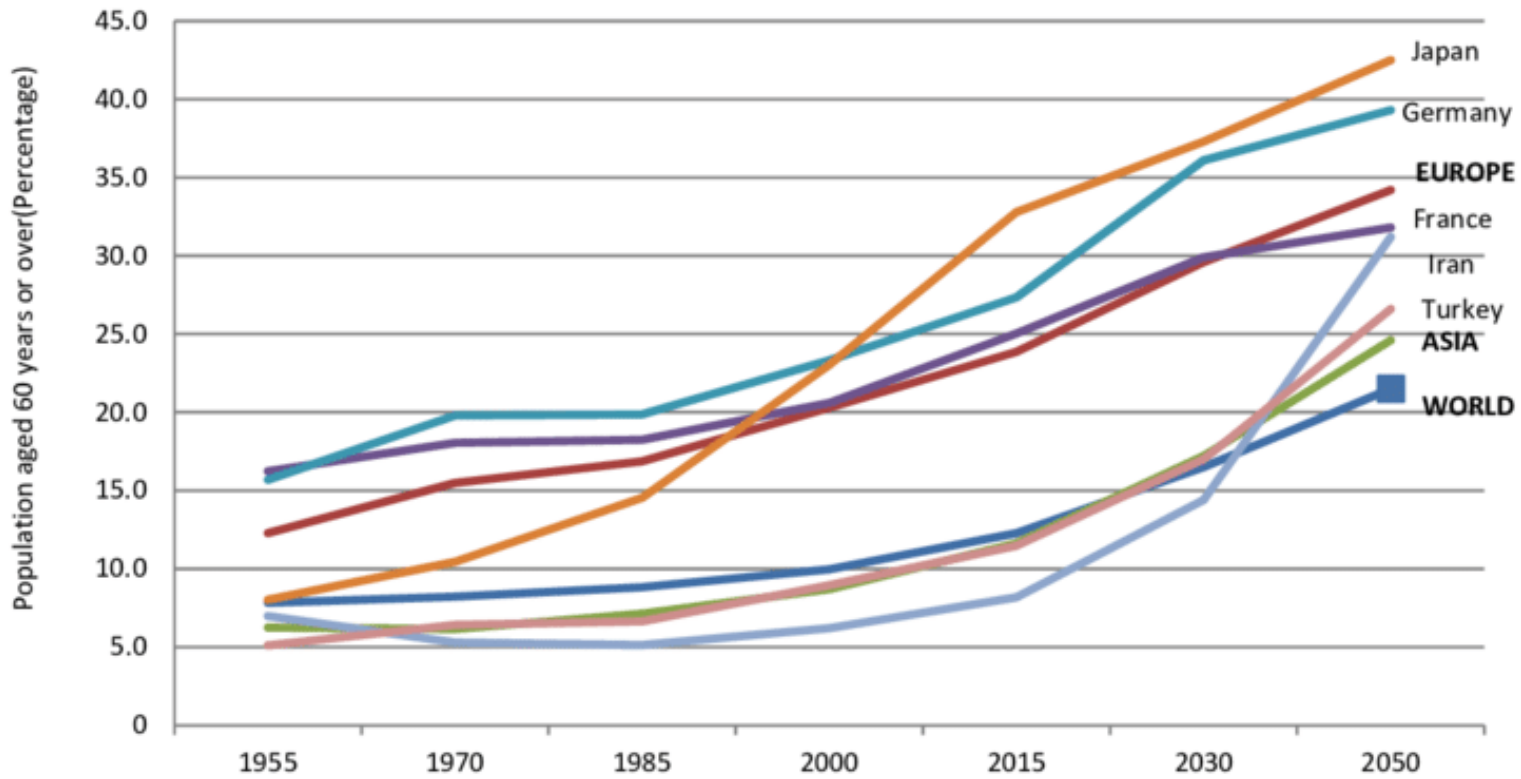


### Sources

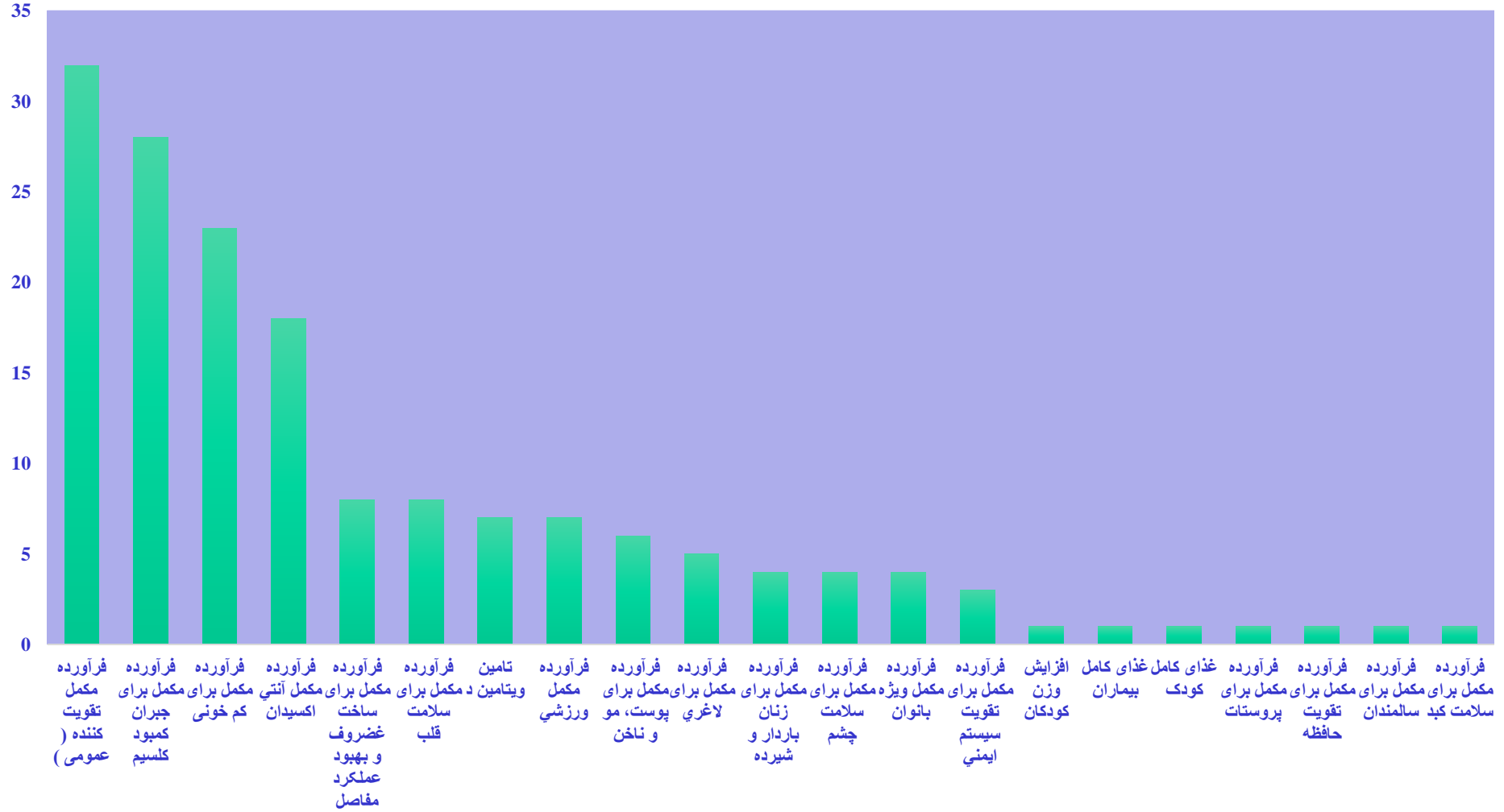
UN DESA; Gapminder  
© Statista 2020

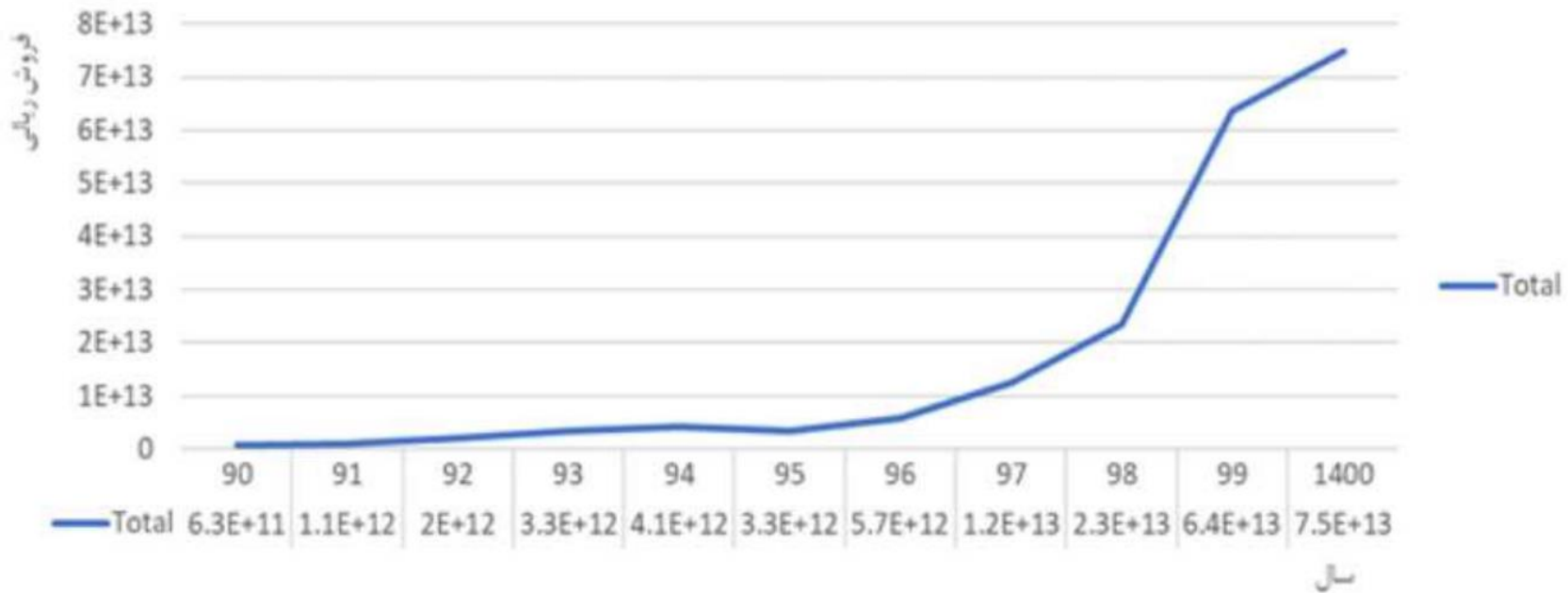
### Additional Information:

Iran; 1870 to 2020

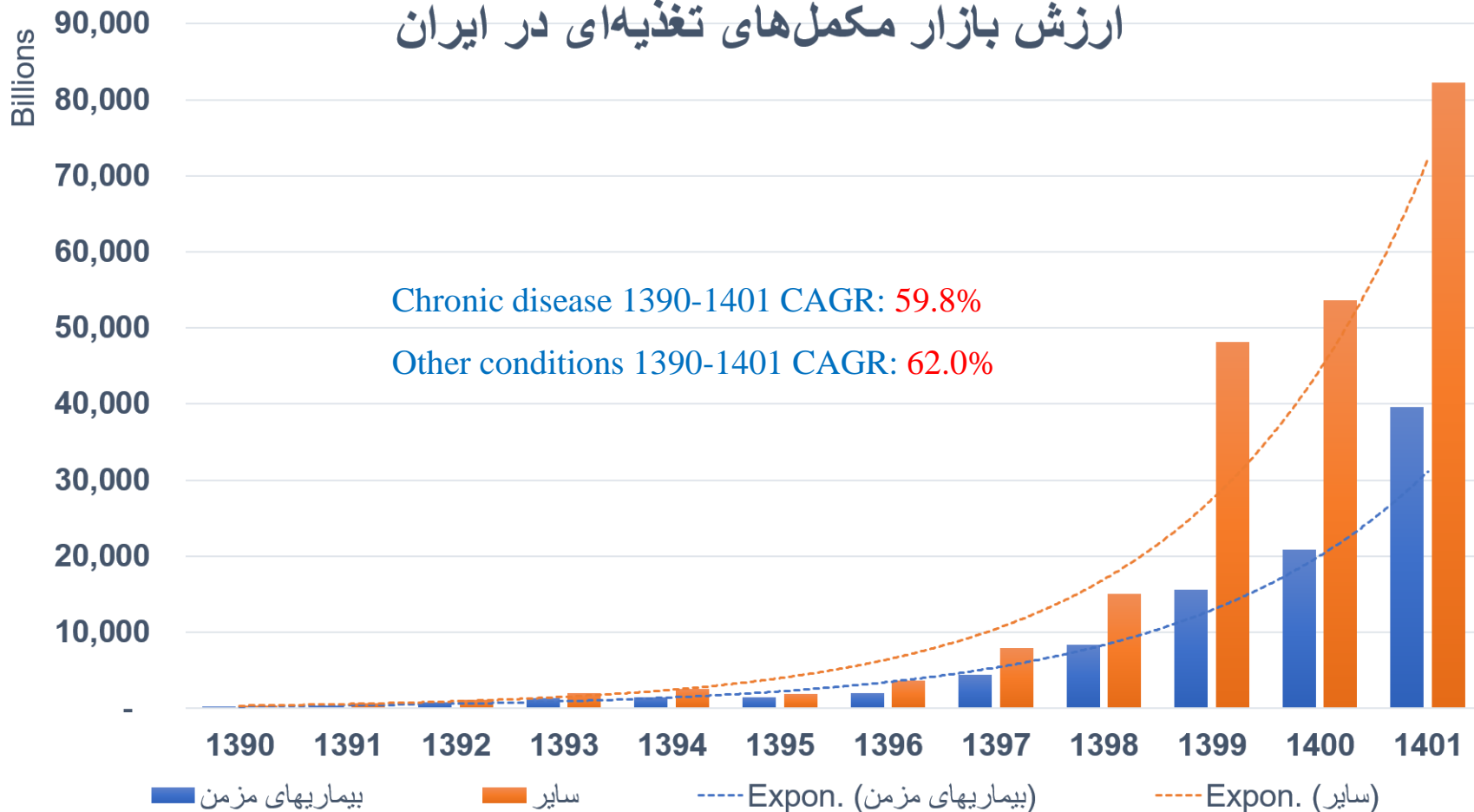


# طبقه بندی مکمل های تولید داخل (دسته درمانی)



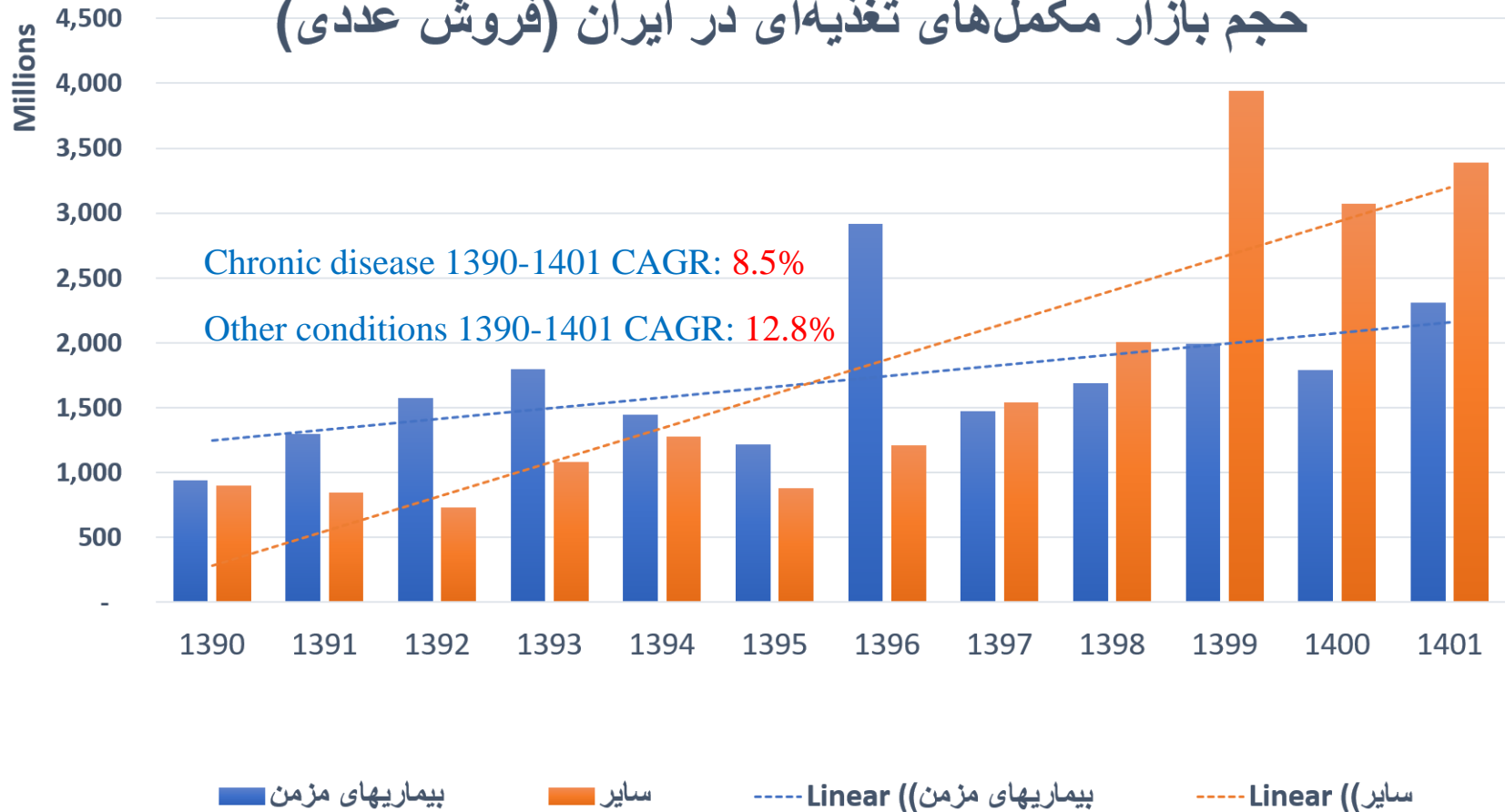


## ارزش بازار مکمل‌های تغذیه‌ای در ایران





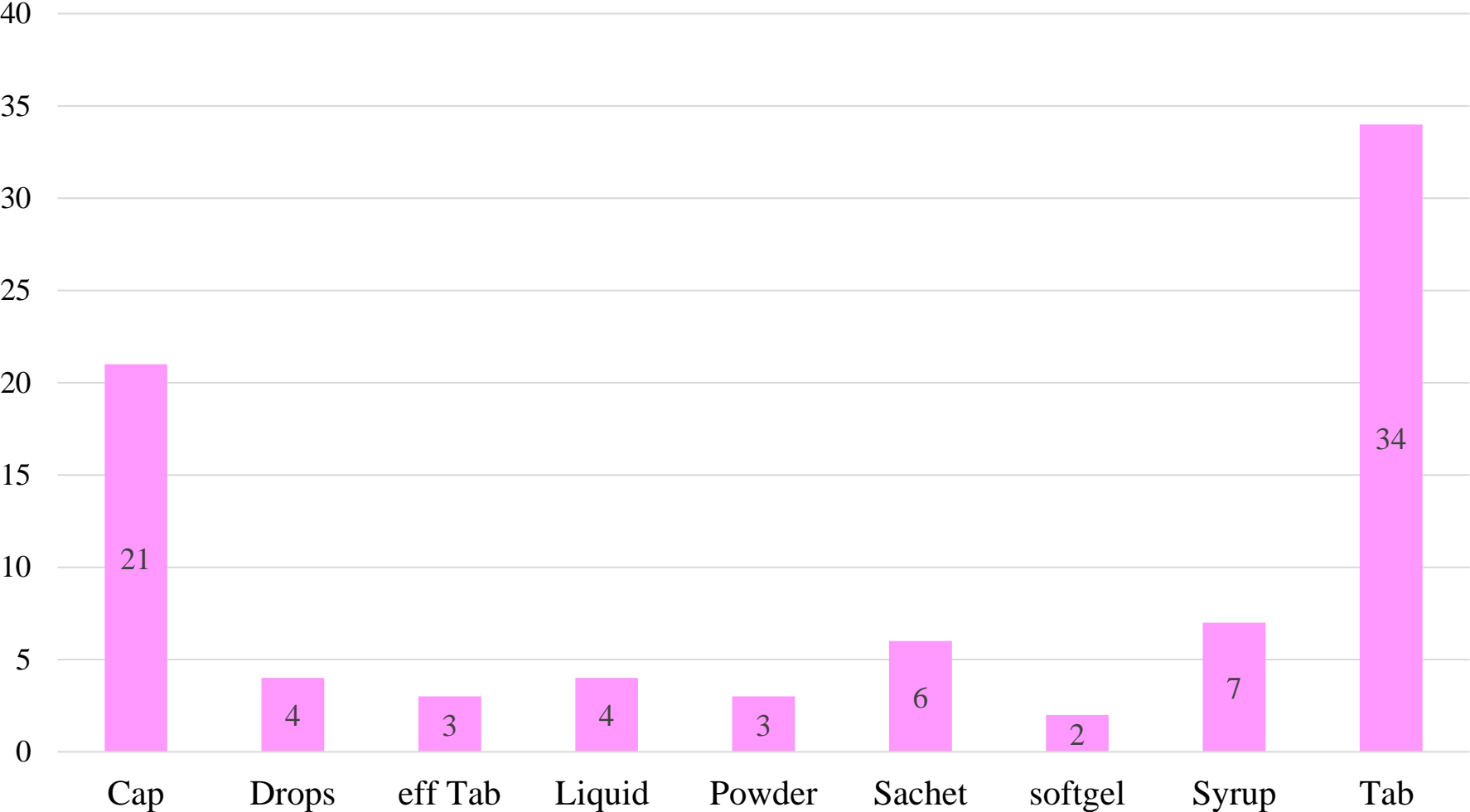
## حجم بازار مکمل‌های تغذیه‌ای در ایران (فروش عددی)



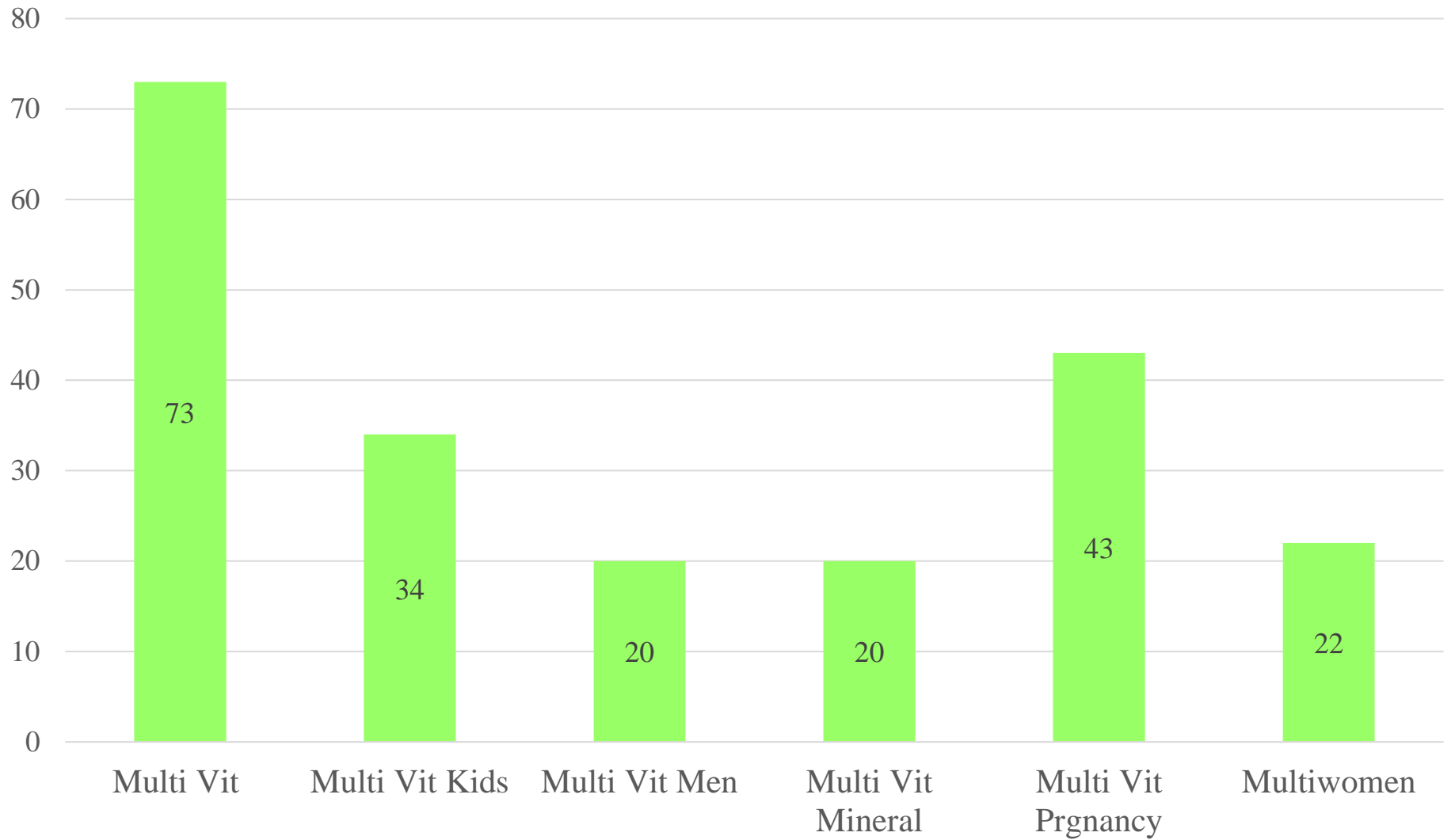
## جدول مقایسه ای تنوع برند مکملهای تغذیه ای تولیدی و وارداتی

ردیف	نام گروه	تعداد تولیدی	تعداد بالک	تعداد واردات
1	ورزشی	189	23	210
2	گروه امگا	39	30	93
3	گلوکزآمین و ترکیبات همراه	32	21	64
4	مکمل پوست ، مو و ناخن	28	9	60
5	کلسیم	64	13	60
6	لاغری	28	15	52
7	مولتی ویتامین مینرال	57	9	51
8	متفرقه	36	12	49
9	تونیک	27	9	45
10	آهن برای بزرگسالان	50	10	43
11	کو کیو تن	19	12	35
12	فرآورده مکمل برای تقویت ایمنی	16	10	29
13	فرآورده مکمل برای سلامت چشم	17	4	27
14	ویتامین D	25	7	27
15	مولتی ویتامین مینرال کودکان	29	8	26

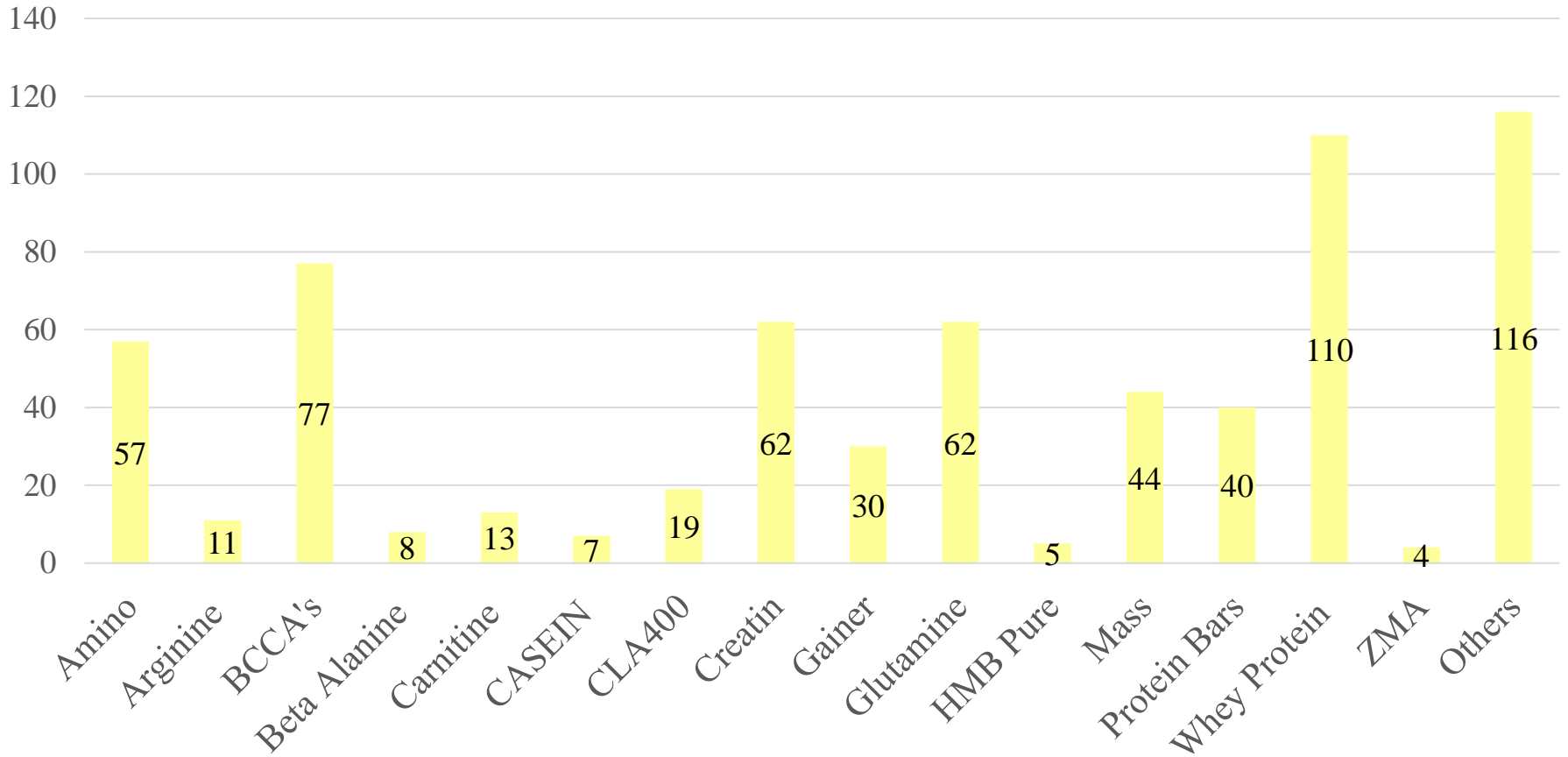
# Iron Types



# Multi Types

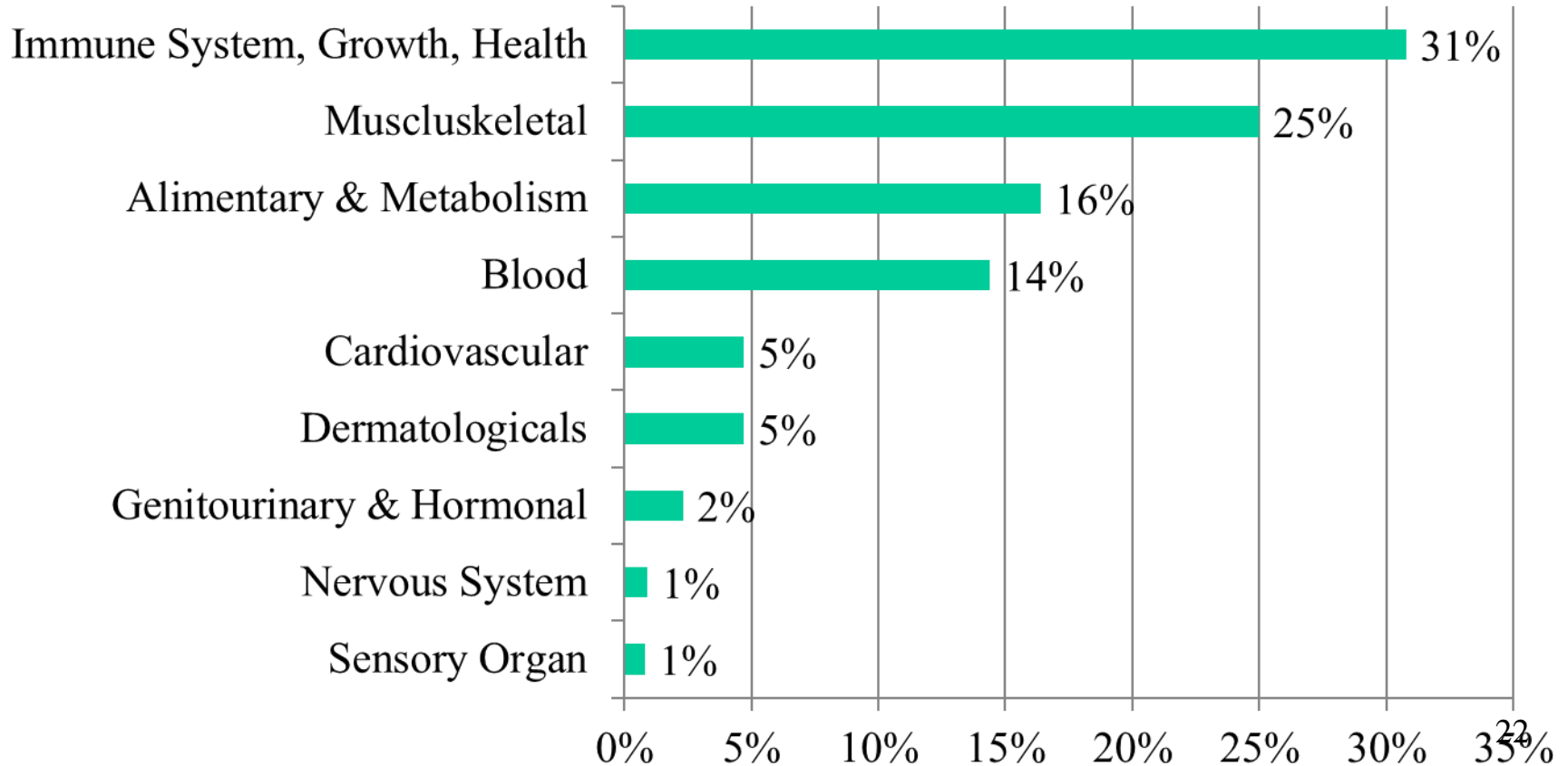


# Sport Nutrition Types

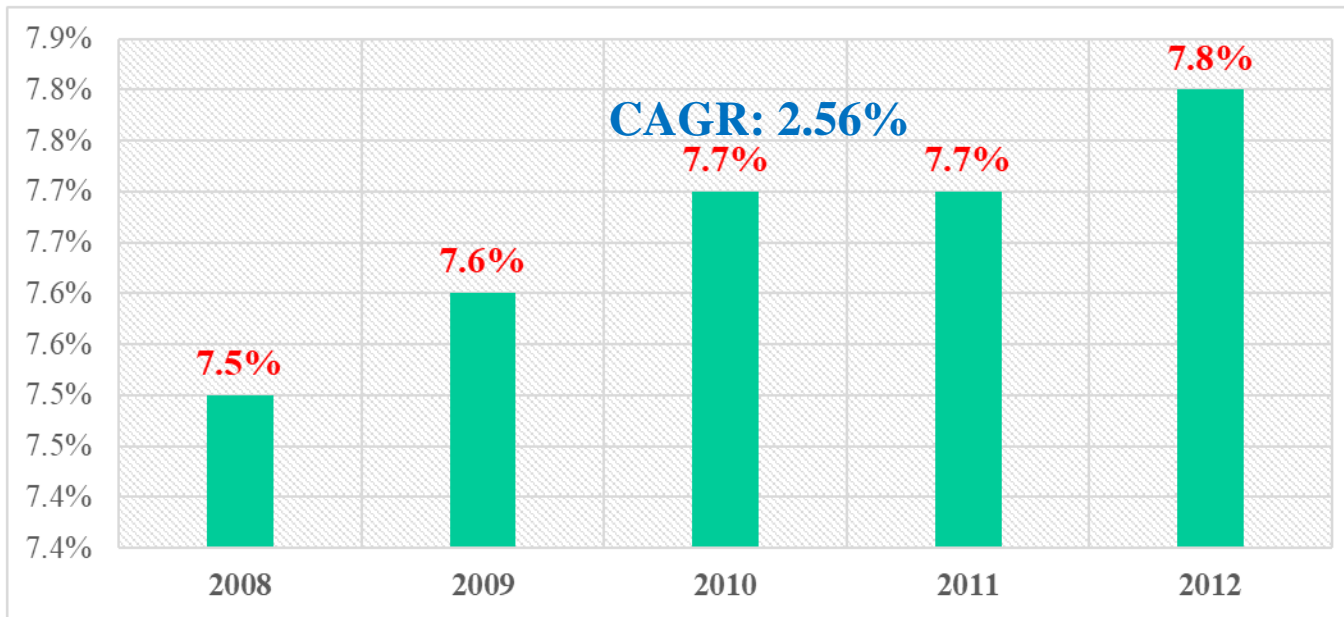


# Market Share (%) of Dietary Supplements

## Anatomical Classification (excl. infant milk)



# Accelerating Aging Population (over 65 years)



Source: World Bank

# World population

By five-year age group, m

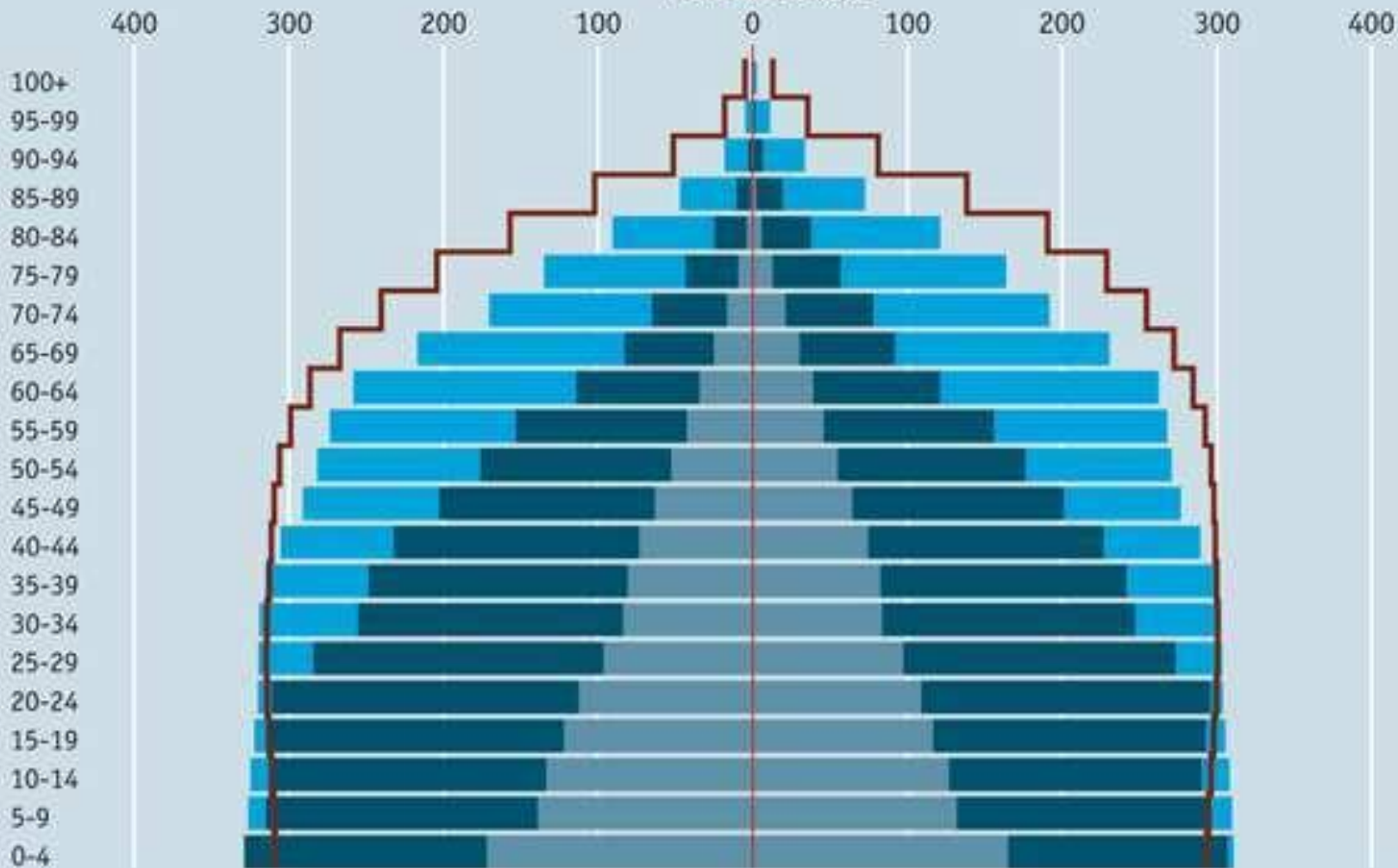
1950

2010

2050\*

2100\*

Male ◀ ▶ Female



Source: UN

\*Projection





## قوت و ضعف

عوامل	امتیاز	وزن	وزن تبدیل شده	حاصل ضرب
<b>عوامل درونی</b>				
کیفیت محصولات	2.93	4.85	0.091	267
مدیریت استراتژیک	2.93	4.23	0.079	232
بازاریابی مکمل های تغذیه ای	2.54	4.31	0.080	205
نیروی انسانی شرکت ها	2.62	4.14	0.077	203
تنوع محصولات	2.75	3.93	0.073	203
حجم تولید	2.81	3.71	0.069	195
میزان رعایت استانداردها و پروتکل ها	2.12	4.54	0.085	180
تکنولوژی مورد استفاده در تولید محصولات	2.42	3.92	0.073	178
میزان توجه به نوآوری در مکمل های تغذیه ای	2.43	3.86	0.072	176
توان اقتصادی صنعت	2.03	4.14	0.077	157
استراتژی های صادراتی شرکت ها	1.79	3.79	0.071	127
تحقیق و توسعه انجام گرفته در صنعت مکمل	1.43	4	0.075	107
امکان رقابت با محصولات خارجی	1.35	3.79	0.071	96
<b>جمع</b>		<b>53.21</b>		<b>333</b>



# نقاط فرصت و تهدید

عوامل	امتیاز	وزن	وزن تبدیل شده	حاصل ضرب	نوع عامل
<b>عوامل بیرونی</b>					
شرکت های بخش مکمل	2.94	4.27	0.076	0.223	فرصت
تجویز کنندگان	3.01	3.91	0.069	0.209	فرصت
کاتال های رسمی عرضه و فروش مکمل	2.88	3.91	0.069	0.200	فرصت
فرهنگ مصرف کننده	2.82	3.82	0.068	0.191	فرصت
ویژگی های دموگرافیکی جامعه	2.61	3.64	0.064	0.169	فرصت
عملکرد رگولاتوری	2.26	4.1	0.073	0.165	تهدید
امکان پذیری (شانس) صادرات از ایران	2.39	3.73	0.066	0.158	تهدید
چگونگی ارتباط و مشارکت ذی نفعان در سیاست گذاری	2.13	4	0.071	0.151	تهدید
سیاست های کلان کشوری	1.88	4.29	0.076	0.143	تهدید
نحوه سیاست گذاری مقابله با قاچاق	2.09	3.64	0.064	0.135	تهدید
شیوه قیمت گذاری مکمل های تغذیه ای	1.75	4.07	0.072	0.126	تهدید
چگونگی دسترسی برای تأمین مواد اولیه	1.51	4.36	0.077	0.117	تهدید
عدم قطعیت های آینده	1.55	4.18	0.074	0.115	تهدید
وضعیت اقتصادی کشور	1.4	4.21	0.075	0.105	تهدید
<b>جمع</b>		<b>56.13</b>		<b>2.214</b>	

# Challenges

- Definition of “Dietary Supplements
- Investments in **infrastructure**
- Setting up a **distribution** channel
- **Understanding** and implementing federal and administrative **guidelines**.
- Setting up a strong **customer service** infrastructure.
- Putting a **comprehensive sales plan in place**

- **Legal/Regulation Issues: Legal Compliance for Selling Supplements Online**
- **Why Making and Selling Your Own Supplements Online is Profitable?**
- **Do You Need a License to Sell Supplements Online?**
- **What is Allowed to be Claimed on a Supplement You Sell Online?**
- **Selling Supplements on Amazon**
- **Leverage Social Media: Selling Supplements on Other Social Platforms**
- **How to Sell Supplements on Instagram?**
- **How to Sell Supplements on Facebook?**
- **How to Sell Supplements on eBay?**
- **How to Sell Supplements on Pinterest?**
- **Selling Supplements on Your Website**
- **The Takeaway**

# ETHICAL CONCERNS

# Handbook of Nutraceuticals for Clinical Use

**Nutraceuticals Active on Central Nervous System**

**Nutraceuticals Active on Peripheral Nervous System**

**Nutraceuticals Active on Heart Function**

**Nutraceuticals Active on Blood Pressure**

**Nutraceuticals Active on Capillaries and Veins**

**Nutraceuticals Active on Lipid Metabolism**

**Nutraceuticals Active on Glucose Metabolism**

**Nutraceuticals for Body Weight Modulation**

**Nutraceuticals Active on Digestive System**

**Nutraceuticals Active on Urinary Tract**

**Nutraceuticals Active on Genital Apparatus**

**Nutraceuticals Active on Women Disorders .**

**Nutraceuticals Active on Immune System**

**Nutraceuticals Active on Bones and Joints**

**Nutraceuticals Active on Skin**

**Nutraceuticals for Physical Activity Support**

- **Benzodiazepine-like activity (apigenin)**
- *Theobroma cacao L.* Mild-to-moderate depression, cognitive decline, cardiovascular disease prevention
- **Curcumin**; *Curcuma longa*; Mild-to-moderate depression, **neuroprotection**
- **L-tryptophan**; Mild-to-moderate depression and premenstrual dysphoric disorder (PMDD), Inflammatory or diabetic neuropathies

- **Melatonin** (5-Methoxy-N-Acetyltryptamine); Insomnia, alterations of the circadian rhythm.
- **$\Omega$ -3 Polyunsaturated Fatty Acids (EPA/DHA)**
- **Caught fish**, Krill, vegetal seeds and oils, algae (*Schizochytrium*) Mild-to moderate depression, **neurocognitive decline**, cerebrovascular disease prevention, hypertriglyceridemia



- **Valerian**
- *Valeriana officinalis*
- Mild-to-Moderate Anxiety, sleep disorders
- Definitive data not available in humans
- **Benzodiazepine-like activity** (valerenic acid), inhibition of GABA-T (GABA transaminase), increase of GAD (Glu decarboxylase), inhibition of GABA reuptake

## Nutraceuticals Active on Peripheral Nervous System

- **Alpha-lipoic acid**; Peripheral neuropathies, in particular diabetic neuropathies.
- **Coenzyme Q10**; Heart failure NYHA-I/IV, diabetic and peripheral neuropathies.
- **L-acetyl carnitine**; Diabetic and peripheral neuropathies.

- **Palmitoylethanolamide** (PEA); Peripheral, diabetic or chemioterapic neuropathies, carpal tunnel syndrome
- Vitamin B1, B2, B6, B9, B12 (in combination) Deficiency **neuropathies**, diabetic and alcoholic neuropathies

# Nutraceuticals Active on Heart Function

- **Beetroot and organic nitrates**
- *Beta vulgaris*
- Organic nitrates dietary supplements
- NYHA I-IV heart failure, Mild-to-moderate hypertension
- Definitive data not available in humans
- Nitric oxide (NO) donor
- Coenzyme Q10
- Dietary supplements

- **Lycopene; Tomato; Mild hypertension**
- **L-arginine; High blood pressure, preeclampsia management.**
- **Potassium; Mild hypertension, hypokalemia**

## Nutraceuticals Active on Lipid Metabolism

- Artichoke( کنگر فرنگی ) ; *Cynara scolymus*, *Cynara cardunculus*; Mild-to moderate hypercholesterolemia; Inhibition of HMGCoA reductase
- **Berberine**; Mild-to-moderate hypercholesterolemia, hyperglycemia
- **Chitosan**; Mild-to-moderate hypercholesterolemia
- **Curcumin**; Mild hypercholesterolemia, especially in insulin-resistant patients

- Green tea extracts
- Nuts
- $\Omega$ -3 Polyunsaturated Fatty Acids (EPA/DHA)
- Plant sterols and stanols
- Probiotics (*Lactobacilli*, *Bifidobacteria*, *Saccharomyces*)
- Psyllium

## **Nutraceuticals Active on Glucose Metabolism**

- Alpha-lipoic acid
- Berberine
- Bergamot
- Chlorogenic acid; Green coffee, black tea
- Chromium



## **Nutraceuticals for Body Weight Modulation**

- Capsaicin
- Chitosan
- Citrus aurantium
- Chlorogenic acid
- Glucomannan
- Green tea