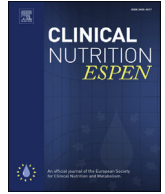


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Is multi-level marketing of nutrition supplements a legal and an ethical practice?

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SUMMARY

Background: Multi-level marketing (MLM) of nutrition products has experienced dramatic growth in recent decades. ‘Wellness’ is the second most popular niche in the MLM industry and represents 35% of sales among all the products in 2016. This category includes dietary supplements, weight management and sports nutrition products. The aim of this paper is to analyse whether this practice is legal and ethical. **Methods:** An analysis of available documentary information about the legal aspects of Multi-level marketing business was performed. Ethical reflexion was based on the “principlism” approach.

Results: We argue that, while being a controversial business model, MLM is not fraudulent from a legal point of view. However, it is an unethical strategy obviating all the principles of beneficence, non-maleficence and autonomy. What is at stake is the possible economic scam and the potential harm those products could cause due to unproven efficacy, exceeding daily nutrient requirements and potential toxicity. The sale of dietary and nutrition supplements products by physicians and dieticians presents a conflict of interests that can undermine the primary obligation of physicians to serve the interests of their patients before their own.

Conclusion: While considering that MLM of dietary supplements and other nutrition products are a legal business strategy, we affirm that it is an unethical practice. MLM products that have nutritional value or promoted as remedies may be unnecessary and intended for conditions that are unsuitable for self-prescription as well.

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1. Introduction

Multi-level marketing (MLM) also known as network marketing is a form of direct sales in which independent distributors sell products, usually in their customers' home, by telephone or through the internet [1]. In this practice, the distributors (or sellers) are rewarded not just for the sales they generate personally, but

also for the sales generated by the people they recruit. In other words, sellers are rewarded economically down through multiple levels of recruits. The MLM distributors become a non-salaried workforce, which do not only sell the company's products, but also encourage others to join the company as a distributor. In 2015, more than 103.3 million people around the world worked for MLMs, creating a retail turnover of approximately 183.7 billion US dollars [2]. ‘Wellness’ is the second most popular niche in the MLM industry, after cosmetics and personal care products only. This category represents 35% of sales among all products in 2016 and includes dietary supplements, weight management products and sports products (Table 1) [3].

Among the top 20 MLM companies by global revenue in 2017, eleven companies are devoted to selling ‘wellness’ products (Table 2) [4]. Some companies such as Herbalife and Usana are specialized in dietary supplements and weight control, other enterprises sell dietary supplements as well as a wide range of

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Table 1
Global sales by product category in 2016.

Wellness	35%
Cosmetic and personal care	30%
Household goods and durables	12%
Clothing and accessories	7%
Home care	3%
Financial services	3%
Utilities	3%
Books, toys, stationery, etc.	2%
Foodstuff and beverages	2%
Home improvement	2%
Other	2%

Adapted from World Federation Statistical Database. <http://wfdsa.org/global-statistics/> [2].

products such as disinfectant cleaners, skincare, make-up, air purifiers and cookware. On their official websites, these companies claim a wide range of benefits to nutritional status and health. In fact, companies are responding to people's deluded demands for health and fitness maximization, anti-aging solutions, immunity improvement, boost of metabolism, weight loss, vitality or organs 'detoxification'. Moreover, some distributors make illegal claims, for example, that nutritional supplements can cure all sorts of diseases or illnesses. In 2016, the watchdog organization Truth in Advertising investigated the 62 companies selling nutrition supplements that were members of the Direct Selling Organization. They found that 60 of them (97%) had illegally claimed or were claiming – either directly or through their distributors – that their products could treat, cure, prevent, alleviate the symptoms of, or reduce the risk of developing diseases or disorders [5]. They found more than 2000 problematic product claims made by

those companies. The list can be consulted at: <https://www.truthinadvertising.org/mlm-health-claims-database/>.

Consequently, the lack of truthfulness within the MLM strategies has become particularly problematic. We must also ask whether this marketing strategy for nutrition supplements is legal and ethical in and of itself? Can physicians and dietitians legitimately become distributors?

2. Is multi-level marketing a legal practice?

MLM business originated in the USA in 1934 with the California Vitamin Company today called Nutrilite (Amway product) and exported worldwide. Selling dietary supplements through MLM strategies can be considered legal when the company and its distributors follow the legal framework and regulations made by the different legislations around the world. In The United States (USA) the regulation of MLM business is made by The Federal Trade Commission (FTC) and in Europe by the Directive 2005/29/e of the European Council which regulates unfair commercial practices [6].

However, some legitimate MLM organizations share many of the same characteristics of illegal marketing scams (called pyramid scheme companies). Looking at this market from a legal point of view, the issue is not black and white and entails more complicated consideration. Sometimes it is a challenge for regulators and for customers to identify companies that operate in the "grey area" [1,7].

The pyramid scheme and MLM strategies depend on recruiting people to become distributors of a product or service, but the entire purpose of the former is to get gullible people's money and then use these people to recruit other so-called 'distributors'. Thus, the

Table 2
The top 20 multi-level marketing companies by global revenue in 2017.

	Company	2017 Revenue	Product	Example of nutritional or health claim
1	Amway	\$8.80 billion	- Nutrition supplements - Weight management - Sport Nutrition - Energy drinks	"Help support a healthy heart, brain, eyes, skin, bones and immune system". ^a
2	Avon	\$5.70 billion	None	
3	Herbalife	\$4.50 billion	- Nutrition supplements - Weight management - Sport Nutrition - Energy drinks	"To maximize your health and fitness goals », « may help the body's absorption of micronutrients ", "to help accelerate your weight management goals", "Can help improve your eating habits", "Helps support your natural defences year-round" ^a
4	Vorwerk	\$4.20 billion	None	
5	Mary Kay	\$3.50 billion	None	
6	Infinitus	\$3.41 billion	- Nutrition supplements	"To stimulate the body's immunity and resistance".
7	Perfect	\$3.06 billion	- Nutrition supplements	" To strengthen immunity, improve cell metabolism, regulate hormonal system, and generate optimum health and vitality". " Improves body physical strength". "Promote healthy liver functions and protect it against damage".
8	Quanjian	\$2.89 billion	Nutrition supplements	^b
9	Natura	\$2.26 billion	None	
10	Tupperware	\$2.210 billion	None	
11	Nu Skin	\$2.208 billion	- Nutrition supplements	"Promote longevity, wellness and vitality".
12	Primerica	\$1.52 billion	None	
13	JoyMain	\$1.49 billion	- Nutrition supplements	"Rejuvenates your body and strengthens your bones".
14	Jeunesse	\$1.41 billion	- Nutrition supplements	"Effectively delay the symptoms of premature aging regulate mental clarity and focus".
15	Oriflame	\$1.40 billion	- Nutrition supplements - Weight management	"To stay young, inside and out".
16	Ambit Energy ++	\$1.2 billion	None	
16	New Era	\$1.16 billion	- Nutrition supplements	^b
17	Telecom Plus	\$1.12 billion	None	
18	Belcor	\$1.09 billion	None	
19	USANA	\$1.01 billion	- Nutrition supplements - Weight management - Sport Nutrition	"Unlock the innate intelligence of your cells to protect and renew good health", "Support for the health and longevity of your cells", "Activate your cells' natural ability to protect and renew themselves", "support your liver's natural detoxification processes". ^a
20	Polá	\$1.004 billion	- Nutrition supplements	"Balance the body"

^a The claims are accompanied by the following sentence: "This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease".

^b Because of language, no translation was available.

primary distinction between the two is that the latter compensates their salespeople for selling products or services to ultimate consumers and not simply for recruiting people. This difference is blurred and difficult to prove.

Nevertheless, the grey area exists primarily because of the inventory of nutrition products they sell. In theory, this inventory will eventually be sold to customers. However, it must be purchased before it can be sold [1]. This can create a problem; a firm may only require a small fee for a representative to get started but the person must really buy a huge quantity of inventory. The fact that more money is being made from the inventory sold to new recruits than from legitimate sales to customers is highly questionable. This practice is called “inventory-loading” or “front-loading.”

The company will increase its sales and overall profits, but the distributor can incur heavy economic loss. Some of the MLM nutrition companies like Herbalife have a clear unabashed ‘front-loading’ practice. Another misleading practice is the introduction of a ‘starter kit’ as in the Usana practice. In order to get into the company’s commission program, a Usana associate must be responsible for an initial fee, of for example, \$20 to \$50 for the starter kit, buy roughly \$150 in products and then order about 120 dollars’ worth of goods each month, either for selling or personal use. In other words, distributors can make money by selling products to people who want them, but they can make much bigger profits by recruiting other salespeople and getting a share of their revenue [8].

3. Are Herbalife and Usana pyramid schemes?

According to the definition of a pyramid scheme and testimonies from thousand of distributors, we consider they are at least “pyramid-shaped”. Legal processes in USA and Europe have been controversial. In 2011, after a long process a Belgian court found Herbalife to be pyramid scheme after examining its marketing plan [9]. The decision was appealed by Herbalife. On the other hand, in the USA FTC determined in 2016 that Herbalife was not a pyramid but a “problematic” scheme mainly because the distributors obtain their monetary benefits primarily from recruiting rather than by selling goods to consumers. Several measures were introduced to ensure that MLM businesses do not operate as illegal pyramid schemes. Herbalife was asked to change their model and to pay \$200 million in an agreement with the FTC to partially refund roughly 350,000 Herbalife distributors. The FTC made a sensible decision, because the whole USA MLM industry was at stake. The economic impact would have been huge.

Thus, considering that MLM strategy is legally permitted in Europe and the US we must ask if all the products particularly the nutrition products can legally be sold. The answer is yes: companies can sell dietary products if they are in compliance with all applicable laws and regulations concerning it. In Europe, the European Food Safety Authority (EFSA) established the Food Supplements Directive (FSD) Directive 2002/46/EC, and the regulation on nutrition and health claims Regulation 1924/2006 [10]. In the USA, dietary supplements are regulated under the FDA as foods (the FDA Food Safety and Modernization Act, signed into law on January 4, 2011 regulates the safety and labelling of these products) and the Federal Trade Commission (FTC); enforced by the State Attorneys General Offices (AGO) and Department of Justice (DOJ), and monitored (not regulated) by the Centers for Disease Control and Prevention (CDC). False claims include misbranding and illegal advertising, which violate FDA and FTC laws respectively [11,12].

Dietary supplements are officially defined as foods, not drugs, and require that every dietary supplement be labelled as such. This means that dietary supplements do not need approval from the FDA before they are marketed. Except in the case of a new dietary

ingredient, where pre-market review for safety data and other information is required by law, a firm does not have to provide the FDA with the evidence it relies on to substantiate safety or effectiveness before or after it markets its products.

According to the FDA Code of Federal Regulation when the supplement “describes the role of a nutrient or dietary ingredient intended to affect the structure or function of the body, the manufacturer is responsible for ensuring the accuracy and truthfulness of these claims”, thus, the company is required to print “This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease” [13]. In fact, only a drug can legally make such a claim. The way around this is to have someone other than the company or its distributors make all the health claims.

4. The ethical argument against multi-level marketing in nutritional products

Assuming that the MLM companies are not fraudulent, is it possible to consider this an ethical strategy? Ethics is a branch of philosophy that aims at conducting an intellectual analysis of the moral human dimension in all of its complexity. Ethics is concerned with principles that allow us to make decisions about what it is right and wrong. In other words, ethics is the study of what it is morally right and what it is not. It refers to a judgment of behaviours, good or bad. The ethical principles of autonomy, beneficence, nonmaleficence and justice as proposed by Beauchamp and Childress [14], are internationally recognized. They are known as principlism and are conceived as part of a common moral ground that permits a practical approach for ethical decision-making. Under this approach, we will analyse the ethical issues concerning the MLM of nutrition products.

The MLM strategy to sell nutritional products is surprisingly well accepted in our Western culture and it has been implemented as a recognized practice even among doctors, dietitians and other healthcare professionals. But is it ethical?

First, the principle of beneficence imposes an obligation to act for the benefit of the patient and physicians and healthcare professionals have to follow professional obligations and standards. Do dietary supplements and other nutrition products provide a benefit to customers? This means questioning the efficacy of the products.

The efficacy of vitamins and minerals supplementation in the treatment of different diseases or conditions caused by nutrient deficiency is well known (i.e., vitamine A and blindness, vitamine C and Scurvy, vitamine D and rickets, etc.), and certainly need to be administrated within the framework of a medical care situation and under expert recommendation. However, the scientific evidence about the efficacy of dietary supplementation with vitamins and other nutrients to treat or control diseases other than those caused by nutrient deficiency is scarce and frequently lacks any solid clinical trials. The Office of Dietary Supplement recently published the review of dietary supplement efficacy and safety. The list concerns few nutrients but it is expected to continue to grow (Table 3).

The lack of clinical trials proving the safety and efficacy of dietary supplements can be explained because the regulations do not demand it as opposed to pharmaceuticals that are vetted for a certain degree of proven efficacy and safety, and where usually new medicines often lasts several years and costs millions. Moreover, those clinical trials are not a research priority basically because the products are defined as foods and in most the cases they are not financially feasible [12].

Nevertheless, the MLM dietary supplements strategy is founded on the assertion that all people need a dietary supplement every day and for a number of reasons. For example, Nutrilite states that supplementation is intended to fill dietary nutrient gaps “ between

Table 3
Office of dietary supplement's review of dietary supplement efficacy and safety.

B vitamins and berries	Inadequate research to reach conclusions.
Ephedra	Short-term weight loss – statistically significant benefit compared to placebo, but associated with health risks including increased palpitations.
Multivitamin/mineral supplements	Cancer – prevents cancer in individuals with poor or suboptimal nutritional status.
Omega-3 fatty acids	- Cardiovascular (CVD) CVD events and all-cause mortality – reduced in 11 RCTs and one prospective cohort study (fish oil), although no effect on stroke. Anti-arrhythmic effects in 13 rat studies of alpha-linolenic acid (ALA) or fish oil – significant risk reduction in the number of deaths, ventricular tachycardia, and ventricular fibrillation. Triglycerides (10e33%): consistently large, significant decreases. Blood pressure: small beneficial effect with fish oil supplementation (reduced about 2 mm Hg), restenosis rates after coronary angioplasty (14% reduction), exercise tolerance, and heart rate variability. - Cognitive Cognitive function during normal aging – a singlecohort study of omega-3 fatty acids found no association for fish or total omega-3 consumption. Dementia: four studies (three prospective cohort studies and one randomized, controlled trial [RCT]) reported reduced dementia risk trend and improved cognitive function with increased dietary omega-3 fatty acids (fish and total omega-3 consumption). Multiple Sclerosis (MS) MS progression – one RCT of omega-3 fatty acids (fish, ALA, EPA, DHA) showed no effect; two single-arm, open-label trials showed improvement in MS-related disability with omega-3 supplementation. MS incidence: two studies were inconclusive. Schizophrenia: evidence of omega-3 fatty acids' potential as short-term intervention.
Soy	- Tumor growth: inhibition or prevention in some animal models.
Vitamin D	LDL and triglycerides levels – small reduction benefit. Bone mineral density: vitamin D3 (>700 IU/day) with calcium supplementation compared to placebo has small beneficial effect. Fractures and falls: reduced risk, but benefit may be confined to specific subgroups.

Adapted from Brown AC, 2017 [11].

what we need and what we eat”, moreover, Usana affirms that “you can trust that the supplements are an excellent choice for a comprehensive micronutrient supplement you can choose to nourish, protect, and renew your health every day and optimize your health span with normal aging.” [15]. Accordingly, everybody will find a product that will fit his or her need. But those affirmations lack any scientific grounding.

Thus, from an ethical point of view, to supplement diet is a good practice when it is framed by an expert knowledge to ensure benefit. Worryingly, any person can become a nutritional supplement MLM distributor and whoever signs an agreement with a company such as Herbalife or Usana becomes a “health advisor”. There aren't any requirements and the person need not be knowledgeable in the health or nutrition field. Millions of people around the world have signed up, attracted by the misleading and altruistic idea of helping or changing people's lives and at the same time making a lot of money. For example, Herbalife asks its would-be distributors: “Are you ready to help change people's lives with the best nutrition and weight-management products in the world?” [16]. In some countries like in Ghana, becoming MLM distributors means gaining higher social status and profit [17].

It is obvious that being a MLM distributor does not make anyone an expert. What is questionable is the misinformation, lack of education and proper training of the distributors. Thus, it is necessary to ask whether the MLM nutrition products, distributed by either a healthcare profession or not, will potentially be harming.

The principle of nonmaleficence imposes an obligation not to inflict harm on others. If the risks and burdens of a therapy for a specific patient outweigh the potential benefits, then the physician has the obligation not to provide the therapy. Harm is concerned with treatments that have an adverse effect. This is more than being wrong, or unjustified; harm can be psychological, moral or physical.

The most significant safety concern posed by supplementation is the sale of adulterated products. According to AC Brown, the “adverse side-effects, if any, are often due to a minority of unscrupulous manufacturers who engage in illegal adulteration with drugs or New Dietary Ingredients (NDIs) which the government infrequently exercises its the power to control”. The number one adulterant in dietary supplement is drugs, followed by an

unquantified number of NDIs that were not submitted to the FDA prior to marketing. Both are illegal [12].

Adverse effects of nutrition supplements are responsible for an average of about 23,000 emergency department visits per year, according to a study published in 2015 in *The New England Journal of Medicine* [18]. The nutrition supplements concerned were herbal, dietary products, vitamin or amino acid micronutrients. Weight-loss products accounted for one quarter of all single-product emergency department visits and disproportionately affected women, while men were more likely to experience adverse effects from products advertised for sexual enhancement and body building.

The use of a large number of dietary supplements and herbal products often distributed by MLM as “natural” is highly suspected to be toxic. However, “natural” is not always synonymous with safe. The case reports in tabular form related to liver toxicity, kidney toxicity, cardiotoxicity, and cancer published from 1966 to May 2016 in the medical literature have been recently published by AC Brown. [12,21,23–25]. This was published together with an online “Dietary Supplements Toxic Table” that provides clinicians, consumers, and manufacturers with a list of herbs and dietary supplements that could potentially contribute to organ injuries (liver, kidneys and heart) and cancer. The aim of the “Toxic Table” it to be continually updated to assist researchers and clinicians in preventing serious adverse events from dietary supplements.

Thus, from an ethical point of view, the respect of the non-maleficence principle is at stake largely when a non-expert distributor, not knowing these risks, recommends a dietary supplement to customers.

5. Why are dietary supplements extensively consumed worldwide despite potential risks and frequent unproven efficacy?

Approximately half of US adults consume dietary supplements of which the primary reasons are to promote overall health and wellness, and fill dietary nutrient gaps [19,20]. The supplements most frequently consumed in the USA are shown in Table 4 [21]. The reasons most often cited for supplement use were for overall

Table 4
Supplements most frequently consumed in USA and Europe in 2011 [27,28].

Vitamin or mineral supplements	67%	63%
Specialty supplements (includes chondroitin, CoQ10, enzymes, homeopathic preparations, hormones, melatonin, omega-3 fatty acids, probiotics, SAME, etc.)/Natural Products.	35%	14%
Botanicals herbs	23%	21%
Sports supplements (includes amino acids, creatine, protein formulas, fat-burners, ribose, androstenedione)/Others	17%	2%

health and wellness (58%) and to fill nutrient gaps in the diet (42%) [22]. In Europe, the dietary supplements consumption varies from one country to another but, it is recognized as a lucrative market, with increases in sales values forecast across Europe. In France for example, 15.8% of the adult population consumed supplements in 2010 [4]. The reasons most often cited for supplement use in France were to fight fatigue (33%), particular conditions or health diseases (21%) and overall health and wellness (17%).

The close historical development between herbs, botanicals and drugs as well as the long history of use of botanicals in traditional medicine contributes to the presumptive belief in some therapeutic efficacy of the nutritional products [23]. Moreover, people are not being informed about the lack of proof of efficacy and distributors are promoting the general belief about the safety of these products.

In addition, meetings of MLM companies are used to motivate distributors to make “personal statements about how products cured their health problems” [30]. The risk of distributors is to, willingly or unwillingly, misrepresent products. Personal and confessional stories about being cured and treated by a nutritional supplement are acclaimed [24,25]. The idea that is conveyed is that the personal use of dietary supplements and nutrition products turns consumers into experts, thus suggesting that their own consumption-based experience can replace independent, professional training [30]. Consequently, even if customers are making their own decision it can't be considered to be completely autonomous because this decision is taken without reliable and complete information. For a decision to be considered to be autonomous it must fulfil certain procedural criteria mainly truthfulness and complete information [26]. This could be ensured competently by physicians and nutritionists. We ask whether those professionals are legitimate to distribute MLM nutrition products.

6. Should doctors and healthcare professionals sell MLM nutritional supplement products to their patients?

It isn't unusual for healthcare professionals, (i.e. physicians, nutritionists, dentists, or dermatologists) to sell nutrition supplements in their offices [27–29]. However, it is ethically questionable when healthcare MLM distributors exploit their professional status and their trusting relationship with their patients to increase their profit [30]. What is at stake is their independence and their medical criteria. Under these circumstances, they might replace the best advice and treatment to patients with treatment with the highest profit margin. Thus, an economic interest hampers the “professional's ability to help the client in accordance with his public pledge to do so” [30]. The problem is the tension between providing independent professional advice and making money.

7. Conclusion

While considering that MLM of dietary supplements and other nutrition products are a legal business strategy, we affirm that it is an unethical practice. MLM products that have nutritional value or promoted as remedies may be unnecessary and intended for

conditions that are unsuitable for self-prescription as well. The respect of the principles of beneficence, nonmaleficence and autonomy are at stake. Under no circumstance is it an ethical practice for physicians or other healthcare professionals neither for non-health professionals distributors. The general public should avoid nutrition and health-related multi-level products altogether while government enforcement action against multi-level companies should be more vigorous and aggressive worldwide. Healthcare professional organizations should define policies and ethical recommendations on how, who and when should prescribe dietary supplements to avoid this practice.

Statement of authorship

Diana Cardenas carried out the conception and design of the study, the acquisition of data, and analysis and interpretation of data. Diana Cardenas and Vanessa Fuchs drafted the article. Both authors gave the final approval of the version to be submitted.

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Conflict of interest

Authors declare no conflict of interest.

References

- [1] Muncy JA. Ethical issues in multi-level marketing: is it a legitimate business or just another pyramid scheme? *Market Educ Rev* 2004;14:47–53.
- [2] World Federation Statistical Database. The official source for all WFDSA statistical data. 2013–2016. Available from: <http://wfdsa.org/global-statistics/> [Accessed 11. 11. 2017].
- [3] US Food and drug administration, FDA. Available from: <https://www.fda.gov/Food/DietarySupplements/> [Accessed 11. 11. 2017].
- [4] Network marketing central. Available from: <http://www.networkmarketingcentral.com/top-100-network-marketing-companies/> [Accessed 11. 11. 2017].
- [5] Truth in advertising. Available from: <https://www.truthinadvertising.org/mlm-health-claims-database/>. [Accessed 11. 11. 2017].
- [6] Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council ('Unfair Commercial Practices Directive'). Available from: <https://www.eccgreece.gr/wp-content/uploads/2015/07/Dir-2005-29-en.pdf>. [Accessed 26. 3. 2018].
- [7] Vander Nat PJ, Keep WW. Marketing fraud: an approach for differentiating multi-level marketing from pyramid schemes. *J Publ Pol Market* 2002;21:139–51.
- [8] USANA Watchdog. Available from: <http://usanawatchdog.blogspot.com/>. [Accessed 11. 11. 2017].
- [9] Herbalife – Belgian Court Decision. AR 2004/7787, No. JC-DC/27. Available from: <https://es.scribd.com/document/76678476/Herbalife-Belgian-Court-Decision>. [Accessed 26. 3. 2018].
- [10] Official Journal of the European Communities DIRECTIVE 2002/46/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 10 June 2002.
- [11] Brown AC. An overview of herb and dietary supplement efficacy, safety and government regulations in the United States with suggested improvements. Part 1 of 5 series. *Food Chem Toxicol* 2017;107:e502–19.
- [12] Sax JK. Dietary supplements are not all safe and not. All food: how the low cost of dietary supplements preys on the consumer. *Am J Law Med* 2015;41:374–94.
- [13] Food Dietary Supplements. Available from: <https://www.fda.gov/Food/DietarySupplements/UsingDietarySupplements/ucm480069.htm>.
- [14] Beauchamp TL, Childress JF. Principles of biomedical ethics. 7th ed. New York: Oxford University Press; 2013.
- [15] USANA. Available from: http://www.usanahealth.net/en_US/essentials/VitaAntioxidant.html. [Accessed 11. 11. 2017].
- [16] Herbalife. Available from: <http://opportunity.herbalife.com/>. [Accessed 11. 11. 2017].
- [17] Droney D. Networking health: multi-level marketing of health products in Ghana. *Anthropol Med* 2016;23:1–13.

- [18] Geller AL, Shehab N, Weidle NJ, Lovegrove MC, Wolpert BJ, Timbo BB, et al. Emergency department visits for adverse events related to dietary supplements. *N Engl J Med* 2015;373:1531–40.
- [19] Bailey RL, Gahche JJ, Miller PE, Thomas PR, Dwyer JT. Why US adults use dietary supplements. *JAMA Intern Med* 2013;173:355e361.
- [20] Dickinson A, Blatman J, El-Dash N, Franco JC. Consumer usage and reasons for using dietary supplements: report of a series of surveys. *J Am Coll Nutr* 2014;33:176e182.
- [21] Hébel P. *Comportements et consommations alimentaires en France*. Paris: CREDOC; 2012. p. 120.
- [22] Johnson J, NBJ Supplement Business Report: a Tough Year for Supplements by the Numbers. Available from: <http://newhope360.com/business/2015-nbj-supplement-business-report-tough-year-supplements-numbers>. accessed 2015. [Accessed 11. 11. 2017].
- [23] Schiff Jr PL, Srinivasan VS, Giancaspro GI, Roll DB, Salguero J, Sharaf MH. The development of USP botanical dietary supplement monographs, 1995–2005. *J Nat Prod* 2006;69:464–72.
- [24] Groß C, Vriens D. The role of the distributor network in the persistence of legal and ethical problems of multi-level marketing companies. *J Bus Ethics* 2017. <https://doi.org/10.1007/s10551-017-3556-9>.
- [25] Biggart N. *Charismatic capitalism. Direct selling organizations in America*. Chicago: The University of Chicago Press; 2008.
- [26] Varelius J. The value of autonomy in medical ethics. *Med Health Care Philos* 2006;9(3):377–88.
- [27] American Medical Association. Should doctors sell non-health-related products to their patients? The AMA targets Amway. *Health Care Bus Dig* 1998;3: 22–4.
- [28] Whitaker-Worth D, Shahriari M, Slade K, Grant-Kels JM. The ethical controversies of office-based dispensing in academic health centers. *Clin Dermatol* 2012;30:528–32.
- [29] Dumoff AJD. Medical boards' prohibitions against physician supplement sales. *Altern Compl Ther* 2000;6:226–32.
- [30] Koehn D. Ethical issues concerned with multi-level marketing schemes. *J Bus Ethics* 2001;29:153–60.