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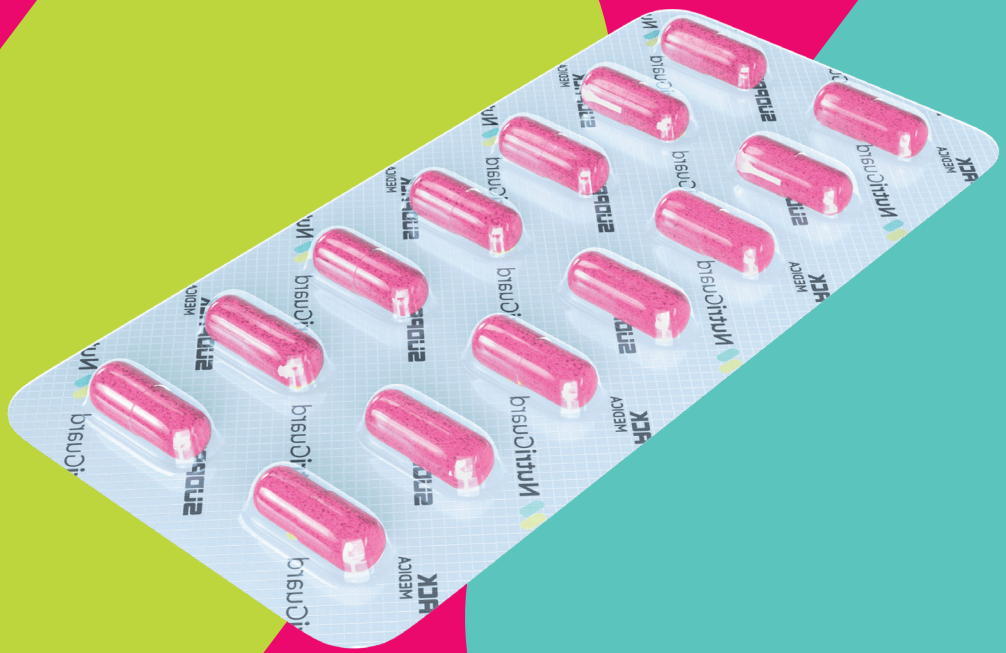
Nutraceuticals – a special case under packaging law

Sustainability meets product protection: Why conventional blister packaging is no longer enough for nutraceuticals



push the boundaries of sustainable packaging for supplements.

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Foreword

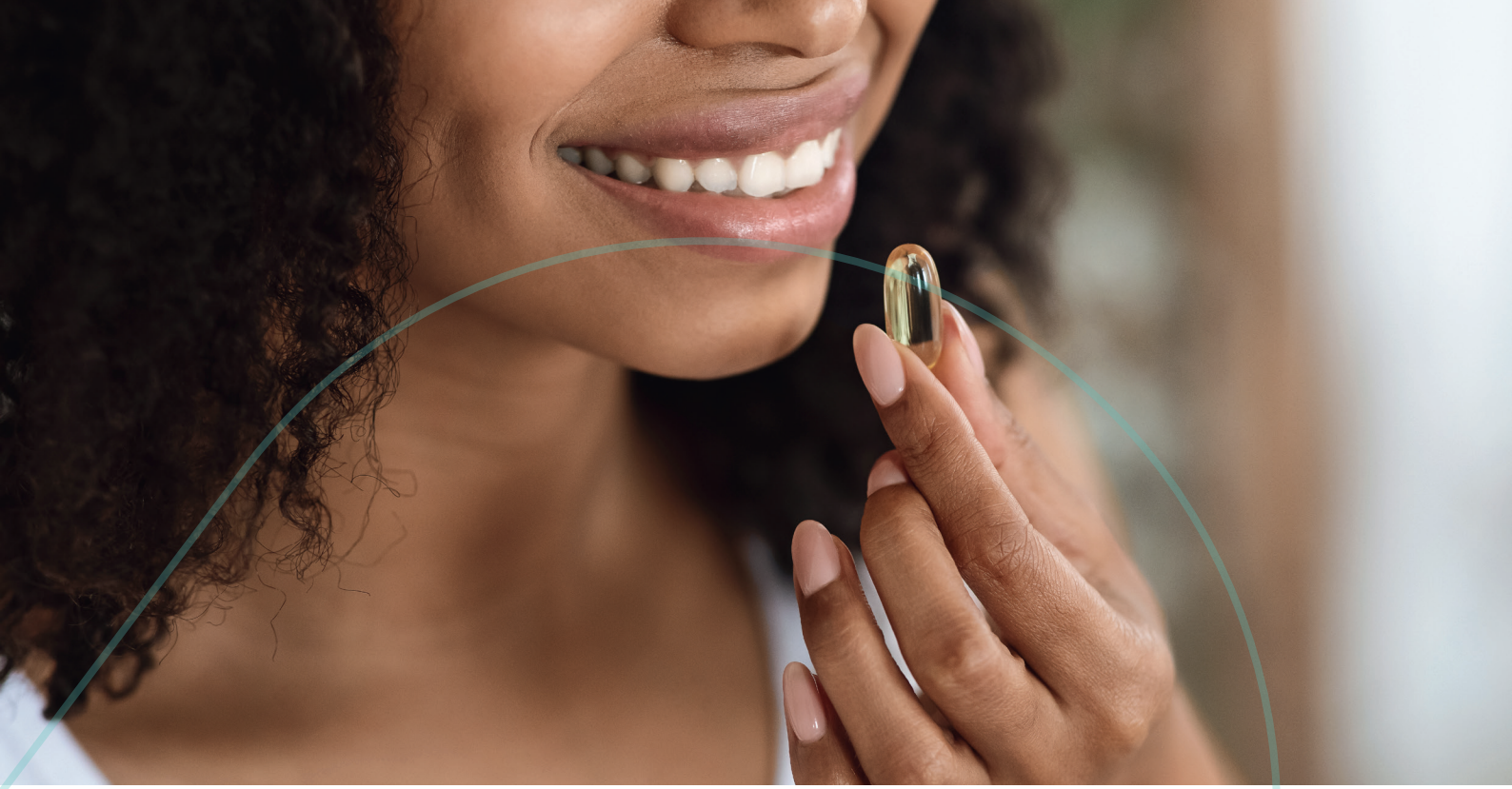
The packaging market is facing profound change: With the EU Packaging and Packaging Waste Regulation (PPWR) set to enter into force in August 2026, the entire food industry will need to prepare for significantly stricter requirements by 2030 at the latest.

At the same time, it is becoming increasingly clear that the nutraceuticals market follows neither the logic of traditional food packaging nor purely pharmaceutical standards. Nutraceuticals occupy a field of application that overlaps in substantive terms with the pharmaceutical industry. Despite this close connection, however, nutraceuticals are governed not by pharmaceutical law, but by food law. From a packaging law perspective, they therefore represent a special case.

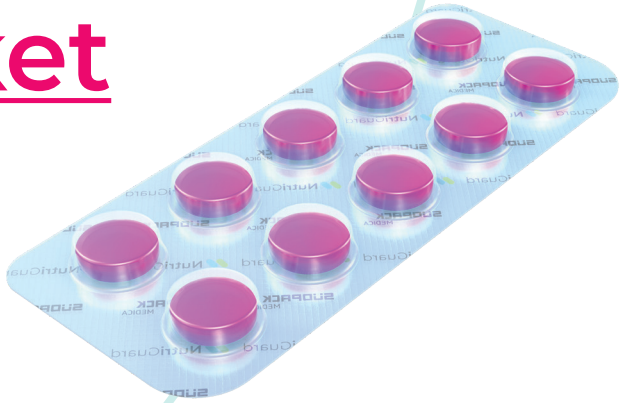
One of the most popular packaging formats for these products, which are typically sold in tablet or capsule form, remains the thermoformed blister made from polyvinyl chloride (PVC/PVdC), which is sealed to aluminum foil and therefore not recyclable. Blister packaging combines a high level of product protection – even after the pack has been opened – with the convenience consumers need when taking products throughout the day or while on the go. In light of the PPWR, however, nutraceutical packaging now requires material structures that reflect its specific regulatory framework, the sensitivity of its ingredients, and evolving market demands – rather than relying on blister concepts originally developed for pharmaceutical applications. Manufacturers, packagers, and distributors are therefore well advised to start exploring future-ready alternatives now and take the necessary steps.

The good news is that a more sustainable packaging option is already available – NutriGuard® from SÜDPACK Medica, a packaging solution that already meets current requirements for product protection, performance, and design for recycling. This innovative primary packaging for dietary supplements is based on mono-polypropylene (PP) and was developed specifically for the food supplement market as a future-ready solution.

This SÜDPACK position paper briefly examines the steadily growing market for these products and, in particular, the challenges created by the new legislation. The focus is explicitly on dietary supplements in solid oral dosage forms.



Nutraceuticals – the market



Nutraceuticals combine elements of nutrition and medicine, bridging the two fields. This link is not a new concept – it was recognized in antiquity and in medieval herbal medicine. Today, nutraceuticals are firmly established in everyday life as people increasingly focus on a healthy, balanced diet and natural ways to address nutrient deficiencies.

Nutraceuticals combine nutritional properties with health-related benefits that go beyond basic nourishment. Despite their similarity to therapeutic applications, they are legally classified as foods and are not subject to the same requirements as pharmaceuticals.

One thing is clear: The global nutraceuticals market is already worth more than USD 500 billion and is growing steadily. According to Fortune Business Insights, it is forecast to exceed USD 1 trillion by 2034, representing an average annual growth rate of more than 10 %.[1]

Even excluding functional foods and beverages, the dietary supplements category alone has a current market volume of more than USD 100 billion. This segment is forecast to grow by around 9 % annually, reaching more than USD 200 billion by 2034. Vitamins, minerals, and proteins are the dominant product group.

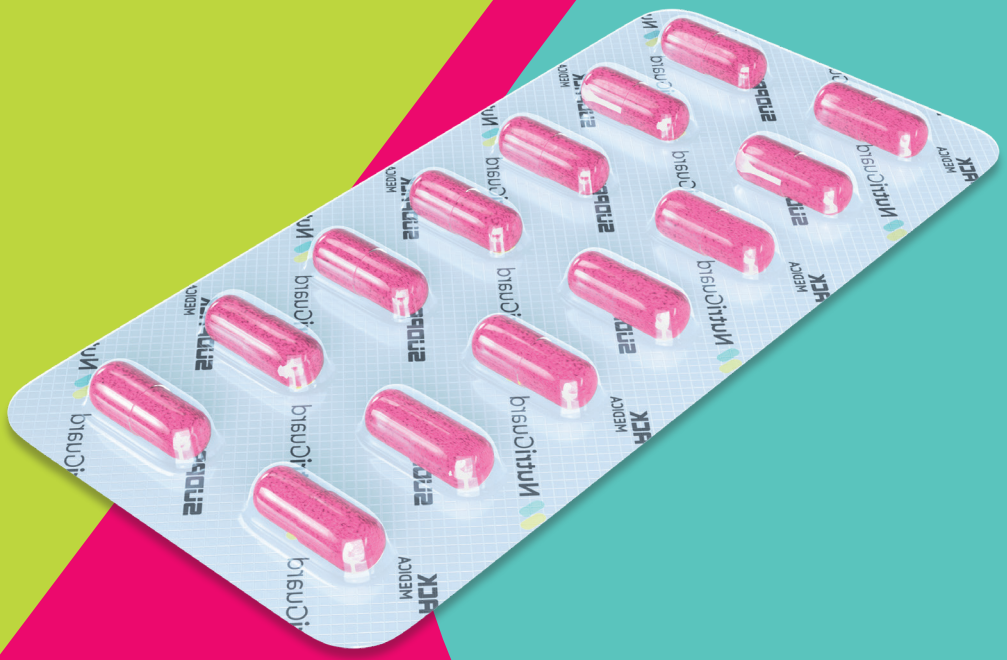
After Asia-Pacific, which accounts for more than 40 % of sales, Europe ranks second at 28 %, closely followed by North America. Within Europe, Germany plays a leading role alongside the United Kingdom and France.[2] According to a study by Food Supplements Europe, 88 % of European consumers have taken dietary supplements at some point, most of them recently.[3]

Regulatory turning point: The PPWR is reshaping the blister packaging landscape for dietary supplements

Dietary supplements are often offered in dosage forms familiar from pharmaceutical products. Tablets are expected to remain the most widely used format worldwide in 2026, accounting for more than 38 % of the market, followed by capsules and powders.[2] The reasons are clear: high consumer acceptance, longer shelf life, easier dosing, and greater dosing accuracy compared with liquids and other dosage forms.

Packaging concepts for dietary supplements have also tended to follow pharmaceutical industry standards, particularly when it comes to ingredients, product stability, and shelf life. Parts of the value chain overlap as well. As in the pharmaceutical sector, conventional thermoformed PVC/PVdC blister materials, usually sealed with aluminum foil, remain the dominant packaging format. And for good reason: Compared with canisters or bottles, blister packaging offers a high level of product protection, as the individual tablets remain protected from moisture and other external influences in separate cavities until they are taken. In addition, this packaging concept is highly material-efficient.

With the PPWR coming into force, however, this established but non-recyclable packaging concept will no longer be a viable option.



strong in protection, good for the environment.

The new packaging standard: design for recycling and design for circularity

Manufacturers and distributors looking to succeed in this dynamic, increasingly distinct, and highly competitive industry must address these new packaging challenges without delay. From 2030 at the latest, dietary supplements will be subject to ambitious requirements for food-grade packaging materials and concepts under the PPWR – and will therefore need to meet the corresponding minimum standards. Put simply, design for recycling and design for circularity will also become the new standard for dietary supplements packaging.

The PPWR is now setting the pace

In essence, the PPWR is a specific regulation aimed at reducing packaging waste, promoting the recyclability of packaging, and increasing the use of PCR (post-consumer recyclate). The EU Circular Economy Action Plan provides the strategic framework for a circular economy in the EU, and for achieving the goals set forth in the European Green Deal. The two are closely linked – and provide guidance for the sustainable development of the industry.

The provisions of the PPWR apply to the entire packaging industry and will enter into force in stages. Currently, primary packaging for pharmaceuticals and contact-sensitive packaging for medical products are among the categories explicitly exempted from the new packaging regulation.

When the PPWR comes into force, the new rules on declarations of conformity for packaging will apply from August 12, 2026, followed by sustainability standards from 2030. Article 52 of the PPWR defines the recycling targets for packaging waste, including minimum thresholds for recyclability and recycled content, which will be gradually increased. From 2030, this means packaging must achieve recyclability of at least 70 % under EU standards and include 10 % PCR (post-consumer recyclate).

Detailed information

available at https://www.verpackungsgesetz.com/themen/die-neue-europaeische-verpackungsverordnung-eu-verpackv-2025/#artikel_eu-verpackv_minimierung

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NutriGuard – sustainable blister packaging concept

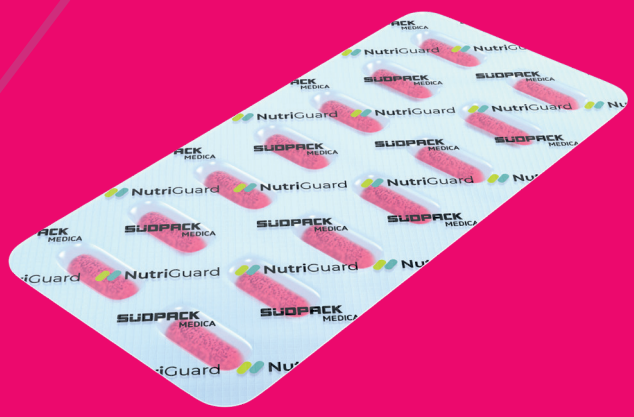
NutriGuard® is a pioneering, future-ready packaging concept for the industry that not only ensures product protection, but also focuses on PPWR compliance. As such, it represents an important step toward a circular economy and greater sustainability in the plastics and packaging industry. As a significantly more sustainable alternative to PVC/PVdC/Alu primary packaging, it directly addresses the needs of today's health-conscious consumers who value vitality and natural products.

For this packaging system, which consists of a PP bottom web and lidding film, SÜDPACK Medica has drawn on the experience gained in developing its multiple-award-winning PharmaGuard® blister packaging concept and adapted it to the specific requirements of the nutraceuticals market. One of its key features is that the packaging is a true mono-material solution that can be fed into existing European PP recycling streams, with its recyclability certified by an independent institute. In addition, SÜDPACK Medica offers NutriGuard® with more than 10 % recycled content from PIR (post-industrial recyclate), sourced from its in-house mechanical recycling operations. Going forward, an enhanced version should also make it possible to meet the 10 % post-consumer recyclate content required under the PPWR. By switching to recyclable packaging, manufacturers and packagers can also benefit from lower EPR (Extended Producer Responsibility) fees in the EU, which will be tightened progressively from 2026 onward. Because these fees are calculated on the basis of environmental impact and recyclability, they will be lower for recyclable packaging than for conventional, non-recyclable material structures.

But NutriGuard®'s benefits don't stop there. According to an evaluation by the Pharma Manufacturing Forum[4], PP offers a significantly better overall carbon footprint than PVC/PVdC + aluminum or PET. It is already being selected by leading pharmaceutical companies as a future-proof packaging material for low to medium barrier requirements.

The solution also delivers clear advantages in both processing and application. Alongside good machinability, the lidding film delivers excellent push-through performance. SÜDPACK produces the required compounds in-house and uses its compounding expertise to optimize the lidding film's recipe for easy handling, allowing tablets to be removed smoothly and without damage. What's more, the film's reliable sealing behavior ensures that when individual tablets are removed, the lidding film does not continue to peel away but opens only at the point of removal – keeping the remaining tablets protected until they are taken.

Finally, the lidding film offers good printability with inks, which are suitable for food-contact applications. Especially in the premium segment, this opens up clear marketing and branding benefits.



PP – a future-ready material for circular packaging

Conventional PVC/PVdC blister materials set a high standard in terms of thermoformability and product protection. Thanks to its barrier properties and large processing window, aluminum is also ideal for the production of lidding films for blister packaging. In short, the combination of these two materials has long been the best fit for the industry's demanding requirements, including machinability.

Today, however, PP is emerging as a forward-looking alternative. While its semicrystalline structure requires greater process expertise, close development partnerships between machine manufacturers and film producers have already enabled processing methods to be largely adapted to this material.

What exactly is PP?

Polypropylene (PP) is a semicrystalline, non-polar thermoplastic belonging to the polyolefin family. It is odorless, skin-compatible, and physiologically safe, making it ideal for applications in the food and pharmaceutical sectors.

Further advantages of PP:

- PP offers heat resistance, stiffness, and a low density of less than 1 g/cm³.
- Its low density results in a higher yield per kilogram of material used compared with conventional blister materials such as PVC/PVdC + aluminum. This also reduces the weight of finished blisters, creating advantages across the entire value chain, for example in transport.
- Overall, PP has a significantly lower carbon footprint than PVC/PVdC + aluminum and PET4
- PP is already widely used as primary packaging in the food industry.
- Leading pharmaceutical companies are also selecting PP as a future-ready packaging material for low to medium barrier requirements.
- PP is the second most widely used standard plastic worldwide and benefits from strong global availability.
- The recycling industry is already well adapted to PP, meaning that meeting the PPWR requirement for industrial-scale recyclability ("recyclability at scale") from 2035 should not pose a challenge.
- In terms of the barrier profile, PP outperforms mono-PVC, as it inherently provides an excellent water vapor barrier.

SÜDPACK and PP: optimized for industry-specific requirements

Key criteria when processing PP include thermoformability and forming behavior. Uniform wall thickness across the cavities is especially important, as it is essential for preserving the material's barrier properties. This is where PP offers a major advantage: Thanks to its natural water vapor barrier and favorable barrier behavior during deep drawing, its barrier performance declines at a less than proportional rate as wall thickness decreases. This differs from amorphous plastics, where thickness and barrier performance are directly proportional.

A key challenge for processors working with PP materials is the films' different shrink behavior. Thanks to SÜDPACK's expertise in coextrusion and its extensive material and application know-how, however, NutriGuard's thermoforming properties can be controlled very effectively and kept consistent. This makes shrink behavior predictable and allows it to be factored into tooling design.

In addition to tooling design, machine adjustments may also be required when processing PP films. Through close collaboration with renowned machine manufacturers and suppliers, SÜDPACK is also able to adapt the material-specific properties of PP films to the requirements of blister packaging machines. As a result, processing on existing packaging lines is usually possible with only minor modifications.

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Conclusion and outlook

Many companies are now focusing on improving their carbon footprint. Their aim is to set new standards through sustainable business practices and recyclable products and packaging. This positive trend has been evident in the food industry for some time and is now also clearly emerging in the pharmaceutical and dietary supplements sectors, where major players are sending strong signals to the market with their sustainability initiatives.

In short, demand for innovative solutions is growing – and supply is keeping pace. As a leading manufacturer of high-performance films and packaging concepts, SÜDPACK moved early to align its portfolio with this demand. Based on current calculations, its highly material-efficient and recyclable products already meet the PPWR recyclability requirements that will apply from 2030.

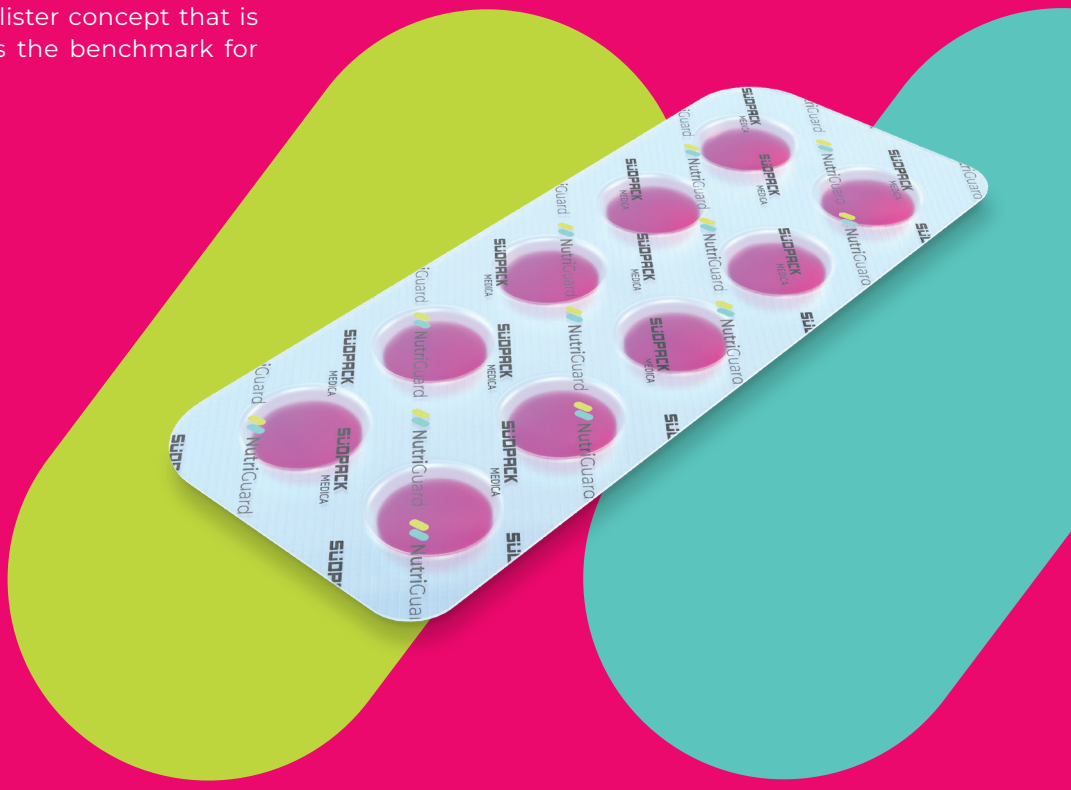
Companies that take a holistic approach to sustainability – from regulatory requirements to environmental and competitive considerations – now need to lay the groundwork for the future. This step is all the easier with NutriGuard®, a blister concept that is already available today and sets the benchmark for future-ready solutions.

1 Nutraceuticals Market Size, Trends, And Growth Report [2034]: https://www.fortunebusinessinsights.com/de/markt-f-r-nutrazeutika-102530_

2 Nutraceuticals Market Size And Share | Growth Report [2034]: https://www.fortunebusinessinsights.com/de/markt-f-r-nahrungsergnzungsmittel-102082

3 Consumer Data | FSE: https://www.foodsupplementseurope.org/consumer-data

4 The Many Facets of Sustainable and Recyclable Blister Packaging for Pharmaceuticals Primary Packaging | Healthcare Packaging: https://www.healthcarepackaging.com/sustainability/recyclability/article/22932333/the-many-facets-of-sustainable-and-recyclable-blister-packaging-for-pharmaceuticals-primary-packaging



Helping to improve people‘s lives with safe and reliable packaging.

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