



Ashwagandha: The right ingredients for success in Europe

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CUTTING-EDGE SCIENCE AND A NARRATIVE OF HEALING

Consumers are increasingly searching out natural ingredients with functional properties that are backed by peer-reviewed scientific studies. They want reassurance that the money they spend on herbal extracts will indeed provide balance and supplemental health benefits to their busy lives. KSM-66 Ashwagandha delivers on this by combining clinically-proven benefits with a narrative of traditional healing.

Ashwagandha is adaptogenic, which means it can help to stabilise physiological processes in the body that may be out of balance. Studies¹ have shown that KSM-66 Ashwagandha, produced by Ixoreal Biomed, can decrease cortisol levels in people under chronic stress, restore healthy adrenal function, and normalise the nervous system. Combined with its ease of use, the ingredient is highly attractive to manufacturers looking to target consumers with functional benefits.

A TRADITIONAL INGREDIENT

Ashwagandha (*Withania somnifera* Dunal) is a small, woody shrub that belongs to the nightshade (*Solanaceae*) family. Taking about seven months to reach full harvest potential, it grows well in the dry arid drought-tolerant soil found in its native India. It can also be found in some parts of Asia, Africa and the Mediterranean.



The plant first appeared in the traditional Indian medical practice of Ayurveda and was used to enhance the movement of mind and body, an Ayurvedic principle known as *vata*. The root has historically been used to treat a range of internal conditions, from constipation and insomnia to nervous breakdown. This would have been crushed into a paste and mixed with water and consumed in beverage format. This tonic would also have been considered a diuretic, aphrodisiac and stimulant capable of raising metabolism. The bitter leaves were traditionally used topically, and related to fever and painful swellings.²

Most current research has focused on the therapeutic effects of the root extract, and the plant has been recognised as having a range of potential applications. These now include cutting cortisol levels and stress and building muscle. Such broad applicability has made ashwagandha a focal point of industry interest.

KSM-66's CUTTING-EDGE PROCESSING

From a technical point of view ashwagandha boasts a wealth of phytochemicals. Besides flavonoids, choline, fatty acids, amino acids and a number of different sugars, ashwagandha root also contains withanolides, a group of at least 300 naturally occurring steroids that have been shown to have medicinally interesting properties. So far, more than 140 withanolide compounds specific to ashwagandha root have been isolated, and there may well be more. Ixoreal's extraction method - water-based extraction rather than hydroalcoholic extraction – means that each batch of KSM-66 contains at least 5 % withanolides. It also ensures that KSM-66 is a concentrated 'full-spectrum' product³, maintaining the balance of the herb's various constituents.

While some ashwagandha makers combine the plant's leaves and the root, Ixoreal only uses the roots, with no adulteration by leaves. This provides for maximum clinical effectiveness, as confirmed in a large number of peer-reviewed studies and in accordance with traditional Ayurvedic practices. Extracts containing leaves may be considered to lack safety and efficacy data supporting them,⁴ and some European Member State regulatory authorities explicitly disapprove of extracts with leaves. KSM-66's approach of using only roots is therefore based on solid scientific foundation. Furthermore, products adulterated with leaves contain higher levels of withaferin A, a withanolide that is cytotoxic. KSM-66 consists of negligible levels of withaferin A, making it safer for human consumption.⁵

The production method also means that KSM-66 can be added to certified organic products – another key growth sector – and is not restricted to capsule and tablet format. The ingredient also conforms to other labelling requirements – Halal, non-GMO – which will help manufacturers to develop products that meet consumer expectations. Aided by its excellent solubility and heat stability, KSM-66 can be found in a wide range of delivery forms including chocolates, beverages, gums, energy drinks, energy shots, functional waters, meal powders and, of course, capsules, tablets and soft gels.

MULTIFUNCTIONAL PROPERTIES

Ixoreal's water-based extraction process presents manufacturers with a key advantage – no bitter aftertaste. A bitter flavour is a common characteristic of hydro-alcoholic extracts of ashwagandha, which limits the ingredient's functionality. With KSM-66, no flavour masking additives are required. It also means that the ingredient is easy to use and can be introduced in a blend of other functional ingredients or as a standalone ingredient.

The fact that KSM-66 is a full-spectrum extract means that the balance of various constituents in the original herb is maintained, without over-representing any one constituent. This is important because the herb's efficacy is believed to be derived from a complex blend of active constituents, mainly alkaloids like withanine, somniferine, tropine, and withanolides. All these constituents need to be present in their natural proportions, which is why it is important for an extract to be full-spectrum.

The ingredient's multifunctional properties and bioavailability - the extent to which its active compounds can be absorbed by the body - give manufacturers a range of potential targets. These bioactive compounds have been shown to offer antioxidant, anti-inflammatory, and immunomodulatory activities. Clinical trials indicate that withanolides contained in KSM-66 are potent inhibitors of angiogenesis⁶ (a condition that can play a role in tumour growth), inflammation, and oxidative stress.

As anxiety can be one outcome of chronic or severe stress, ashwagandha could play a critical role in stress management.



Withanolides have been shown to inhibit the activation of NF- κ B and NF- κ B-regulated gene expression, which explains their antiarthritic actions.⁷ The steroidal and methanol constituents of ashwagandha - such as those found in withaferin A and various sitoindosides - inhibit the formation granulation tissue that forms in response to infection or inflammation. In terms of bioavailability, ashwagandha's immunomodulation properties can be traced to five constituents that regulate 16 proteins, affecting 15 different immune system pathways. Alkaloids found in ashwagandha can increase haemoglobin, iron and proteins, representing an enhanced ability to fight infections.⁸

The clinical studies conducted on these multifunctional properties will be explored in more detail in this paper. The bottom line is that the findings have shown that KSM-66 is not only easy to use but potentially clinically effective. KSM-66 has already made significant inroads into products and supplements on the European market that target sporting performance, cognitive health and sexual and reproductive issues.

CASE STUDY 1:

THE RIGHT INGREDIENTS FOR SUCCESS

Ashwagandha's scientifically proven benefits, combined with its traditional appeal, make the ingredient extremely attractive to supplement manufacturers, says KeyPharm.

Adaptogenic botanical extracts are increasingly perceived as playing an important role in supporting our bodies both physically and mentally. KeyPharm's dietary supplement range Physalis focuses on synergistic complexes built up with ingredients that have a strong and clear scientific background. Ashwagandha has a prominent role in many of the firm's products.

Tackling stress

KeyPharm uses KSM-66 Ashwagandha in its complexes with adaptogenic botanicals extracts, and also in products for stress-relief and an organic energy complex.

Dr. Ciska Wyns, Head of R&D at KeyPharm, explains:



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“Stress is an underestimated and underlying cause of many health problems. Our lives are increasingly influenced by stress brought on by emotional factors; poor nutrition; and diseases that can affect many systems in our body.”

“The ingredient has also been incorporated in our student formula, since it is a safe product which can be used by students to cope with stressful periods like exams.”

The right profile

One of the things that makes KSM-66 an appealing ingredient from a product development point of view is that it is a fully traceable organic ingredient with a very good safety profile.

According to Dr. Ciska Wyns (KeyPharm):

“Traditional ingredients like ashwagandha, which already have a long history of use, are being rediscovered. Certainly, when they are backed by science and produced with state-of-the-art modern technologies/methods, this makes them highly attractive.”

Dr Wyns also notes that there are few technical challenges from a manufacturing point of view. The recommended efficient daily dosage and the ingredient's organic status make it an ideal candidate for both tablets, capsules and any other application.

As with all health-related concerns, of course, a range of factors still need to be taken into account. Dr. Wyns believes that achieving a deeper knowledge and understanding of a specific issue can help manufacturers finetune their product formulations in order to be optimal.

According to her:

"Technologists in the broad sense of the word can play an important role here in integrating health-related products along the production chain, from development through to marketing."

On this final point, Dr. Wynn believes that ashwagandha resonates with consumers looking for natural supplements that not only have scientific backing, but a traditional narrative of healing as well:

"I think that ashwagandha's relationship with Ayurveda, the Indian traditional medical system, is very positive from a marketing point of view. Together with the high degree of safety and the clinical studies performed, I think this extract is very appealing."

SCIENTIFIC BACKING FOR CLAIMS

Another reason for the ingredient's growing popularity has been the numerous clinical studies that have been conducted. KSM-66 is the ashwagandha extract with the most extensive set of research studies, which are all randomized, double-blind placebo-controlled studies. Priority is placed on publication of results in peer-reviewed journals that are indexed in PubMed, a database maintained by the US National Library of Medicine.



Kartikeya Baldwa,
Director of Ixoreal
Biomed

Kartikeya Baldwa, director of Ixoreal Biomed, explains:

"Ashwagandha has been advocated for a wide range of applications by practitioners and traditional texts. However, for many of these applications, there is inadequate supporting evidence in modern scientific literature. Ixoreal has been a significant force in bringing a rigorous clinical lens to many of these claims."

• Cutting stress

Ashwagandha has been used for years to relieve stress, and this is now backed up by science. A 2012 study published in the Indian Journal Psychological Medicine found that high-concentration, full-spectrum ashwagandha extract can safely and effectively improve an individual's resistance towards stress.⁹ Some 64 subjects with a history of chronic stress were engaged in relevant clinical examinations and laboratory tests.

These included a measurement of serum cortisol and standard stress-management questionnaires. The KSM-66 group exhibited a significant reduction in scores on all stress-assessment scales on day 60, relative to the placebo group. The serum cortisol levels were also substantially reduced.

A more recent study, published in the *Journal of Evidence-Based Complementary and Alternative Medicine*, featured 52 subjects under chronic stress receiving 300 mg of KSM-66 or placebo twice daily. Subjects were assessed at the start and at four and eight weeks. Again, results suggested that ashwagandha root extract can be used for body weight management in adults under chronic stress.¹⁰

• Enhancing physical performance

Clinical studies have also provided formulators with scientific evidence that ashwagandha can strengthen physical performance. One study demonstrated the efficacy of ashwagandha root extract in enhancing cardiorespiratory endurance in adults. Athletic men and women were assessed by measuring the oxygen consumption at peak physical exertion levels during a shuttle run test, in conjunction with the World Health Organisation's self-reported Quality of Life questionnaire.



Data confirmed a "significant improvement" in the physical and psychological health and the social relationship status of the study subjects by the end of 12 weeks. The study also demonstrated marked muscle strengthening, exercise tolerance, and lipid-lowering potential of ashwagandha, along with improved quality of sleep. "Findings suggest that ashwagandha root extract improves the cardiovascular dynamics ... and also brings an improvement in quality of life in healthy adults", the report noted.¹¹

Another study associated ashwagandha with increases in muscle mass and strength, suggesting that supplementation could be useful in conjunction with a resistance training programme.¹² In an eight-week randomised, prospective double-blind, placebo-controlled clinical study, 57 male subjects (18 to 50 years old) with little experience in resistance training were randomised into treatment (29 subjects) and placebo (28 subjects) groups. Both groups underwent resistance training for eight weeks; measurements were repeated at the end of the training.

The results indicated that the ashwagandha group had "significantly greater increases in muscle strength" on bench press and leg-extension exercises. They had greater muscle size increase in the arms and chest, plus the ashwagandha group had a much greater reduction of exercise-induced muscle damage.¹³

• Repairing cognitive function

A pilot study¹⁴ recently evaluated the efficacy and safety of ashwagandha (as KSM-66) in improving memory and cognitive functioning in adults with mild cognitive impairment. Cognitive decline is often associated with the aging process; given Europe's ageing population, this is an issue that is only set to grow in importance.

After eight weeks, the study found that the ashwagandha treatment group demonstrated significant improvements compared with the placebo group in both immediate and general memory. The study concluded that ashwagandha "may be effective in enhancing both immediate and general memory in people with MCI as well as improving executive function, attention, and information processing speed". Ashwagandha has long been used in the traditional Ayurvedic system of medicine to enhance memory and improve cognition; now this is backed up by science.

• Enhancing sexual health



A recent clinical study¹⁵ examined whether high-concentration ashwagandha root extract (as KSM-66) could reduce female sexual dysfunction (FSD), which can result in reduced libido and pain during intercourse. These symptoms are largely due to neurovascular or hormonal imbalances. Results suggested that "ashwagandha root extract could be useful for the treatment of FSD ... the lack of adverse effects suggests that the extract is safe to consume".

Furthermore, a 2013 clinical study¹⁶ reported a 167% increase in sperm count and a 57% increase in sperm motility after 90 days, for those receiving ashwagandha (as KSM-66). Improvements in the placebo-treated group on the other hand were minimal. Significantly improvements were also observed in serum testosterone levels with ashwagandha treatment as compared to the placebo. "The present study adds to the evidence on the therapeutic value of ashwagandha, as attributed in Ayurveda for the treatment of oligospermia leading to infertility," the report concludes.

CASE STUDY 2:

CLINICAL BENEFITS, NATURAL SOLUTIONS

In the sports nutrition and fitness sector, ashwagandha offers product developers clinically-proven benefits without the drawbacks associated with some other ingredients.

The sports nutrition market has significantly broadened out in recent years. Globally, the market for sports supplements is expected to have grown by 9.1% annually from 2014 to 2020.¹⁷

For David Neeley, Managing Director of Weider Germany at Weider Global Nutrition, ashwagandha hits the spot in terms of satisfying consumer demands:

"This ingredient is one of the best we've seen in a long time.

The big thing for us has been the positive studies on men's health, in particular on testosterone support and testosterone release.

Mass market consumers want to see true clinical study benefits, not just claims made by studies that only look at a few people."

Sports focused

Four years ago, the company developed Weider Prime, a co-branded ashwagandha product for the US market. A combination of ingredients enabled Weider to make claims on the health symptoms it sought to address. The formula has since been adapted for the European market. The company is also marketing Testo Xtreme, a more sports endurance-driven product targeting the fitness and body building sector.

David Neeley (Weider Global Nutrition) explains:

"We put ashwagandha in capsules, liquids and powders.

Ashwagandha is a plant extract, so there is that to think about, but from a product development point of view it is not a difficult ingredient to work with."

Viable and reliable sources

The European market presents its own challenges, for in Europe manufacturers cannot promote findings made in clinical studies; everything has to go through EFSA (European Food Safety Authority) approval first. David Neeley (Weider Global Nutrition) is nonetheless confident that Weider's ashwagandha products will succeed on the European market:

"You have to find a different marketing angle in order to get to the same result.

This can mean using different ingredients to support the claims of benefits that ashwagandha can provide."

"We have businesses located in Europe, which means that we have structures already in place to deal with European issues. And the demand is there.

Ashwagandha comes from a more viable and reliable source than other testosterone ingredients out there, which have encountered problems and bad press. Ultimately, consumers want natural ingredients that help their body naturally."

OPPORTUNITIES AND BEST PRACTICES

- The ashwagandha root contains withanolides, a group of at least 300 naturally occurring steroids that have been shown to have medicinally interesting properties
- KSM-66 Ashwagandha's water-based extraction method requires no flavour masking additives
- KSM-66 Ashwagandha is appealing from a product development point of view in that it is a fully traceable organic ingredient with a very good safety profile
- The recommended efficient daily dosage and the ingredient's organic status make it an ideal candidate for both tablets, capsules and any other application
- Technologists can play an important role in integrating health-related products along the production chain, from development through to marketing

The information provided here was compiled with due care and up to date to the best of our knowledge on publication.

You can find more information about KSM-66 Ashwagandha and the European market in the following white papers:

- Ashwagandha: Navigating European regulations
- Why Ashwagandha means business in Europe



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