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Why Absorica LD?

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For close to four decades, isotretinoin has been a mainstay treatment for severe nodular acne. It was the first and still remains the only oral therapy shown to address all four pathogenic factors of acne including hyper-keratinization, sebum production, *Cutibacterium acnes* proliferation, and inflammation.[1,2]

Those of us who prescribe isotretinoin can likely recount stories of patients for whom the therapy made a significant impact not only on their disease, but on their life. Patients with severe nodular acne—those for whom isotretinoin is indicated[3]—may report physical discomfort, as well as embarrassment and impaired self-esteem, as a result of the condition. Isotretinoin is also commonly prescribed for moderate acne that is treatment-resistant or poses significant risk for physical scarring or psychosocial distress. When their acne is finally brought under control, these patients tend to be highly satisfied with therapy and so grateful to their dermatology providers.

A historical limitation of treatment with isotretinoin has been the bioavailability of standard oral formulations. Isotretinoin is a lipophilic molecule. As such, absorption has been impacted by the consumption—or non-consumption—of high-fat foods at the time of medicine administration. This had led us to advise our patients to take isotretinoin with a high-fat meal. Ironically, one of the possible adverse events of isotretinoin is increased lipids, especially triglycerides, which may lead to acute pancreatitis. In an effort to enhance absorption of isotretinoin independent of diet—thus reducing the onus on the patient—Absorica, featuring Lidose technology, was developed and came to market in 2012. Lidose lipid encapsulation technology allowed isotretinoin to be partially pre-solubilized in a lipid matrix, enhancing absorption even if the drug is not taken with fatty foods.

Approved by the FDA in 2019, a new and different technological innovation has further enhanced the bioavailability of isotretinoin without depending on dietary factors. Absorica LD is a unique formulation featuring micronized technology that actually reduces the size of isotretinoin. The result of this technological innovation is that the micronized drug is absorbed more efficiently in the gut—whether taken with food or in a fasted state. Several studies, as described and discussed in the pages ahead, demonstrate that the absorption of Absorica LD is superior to Absorica. In fact, compared to the older Absorica 40mg, Absorica LD 32mg is bioequivalent when taken with food. Actually, micronized drug absorption is doubled for Absorica LD compared to Absorica when taken without food.[4]

The availability of Absorica LD offers practical benefits. Because micronization improves isotretinoin absorption levels, it is possible to decrease the cumulative dose of isotretinoin required for a patient taking Absorica LD, compared to generic isotretinoin. It is worth noting that the American Academy of Dermatology (AAD) currently recommends a target cumulative dose for isotretinoin in the treatment of moderate to severe nodular acne of 120–150mg/kg. A lower relapse rate was seen for those treated with a cumulative dose of 120mg/kg and the therapeutic benefit may plateau at 150mg/kg.[3] From a practical perspective, since the mg dosage of micronized Absorica LD is 20% less than conventional isotretinoin and old Absorica (with Lidose technology), and achieves similar drug levels under fed conditions, the target cumulative dose could be decreased by 20% as well to 100mg/kg–120mg/kg.[3]

In the past, dermatology providers advised their patients to take conventional isotretinoin with a high-fat meal in order to optimize drug absorption. We know such recommendations can be challenging for patients—especially adolescents—to adhere to on a daily basis, especially when patients may not eat a consistently-timed morning meal. Not to mention, such guidance may not encourage healthy eating habits. With Absorica LD, our patients no longer need to focus on administering isotretinoin in conjunction with a high-fat meal.

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There are many patients with severe nodulocystic acne or potentially scarring acne for whom isotretinoin therapy should be implemented as early as possible in the disease course. Early intervention can reduce the risk for scarring, diminish patient discomfort, and minimize the psychosocial impact of the disease. For those patients for whom isotretinoin is an appropriate treatment option, Absorica LD, which has no legally substitutable product, may offer distinct advantages over other formulations of the drug.

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DISCLOSURE

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ORIGINAL ARTICLE

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Advances in Oral Isotretinoin Therapy

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ABSTRACT

Since its approval in 1982, oral isotretinoin has revolutionized acne therapy. However, oral isotretinoin use has long been associated with challenges of variable bioavailability and food dependence. It is recommended to ingest oral isotretinoin with a high-fat meal in order to maximize absorption, but many patients fail to adhere to this recommendation. This may lead to inadequate isotretinoin absorption levels. Patients who fail to achieve isotretinoin target cumulative dose are more likely to experience symptom relapse. To address the challenge of traditional isotretinoin variable bioavailability, subsequent isotretinoin formulations have attempted to improve its absorption abilities. In 2014, an isotretinoin formulation utilizing Lidose technology, known as Absorica, showed significant improvements in absorption levels compared to traditional oral isotretinoin in the fasted state. In 2019, isotretinoin absorption levels were further advanced in a new formulation approved by the FDA known as Absorica LD. Utilizing advanced micronization technology that physically reduces the size of the drug molecule, Absorica LD exhibits twice the absorption levels of Absorica under fasting conditions. In the fed state, Absorica LD achieves similar plasma levels to Absorica with a 20 percent lower dose. Absorica LD also produces consistent serum isotretinoin levels irrespective of gastrointestinal contents. By eliminating the "food effect" seen in traditional oral isotretinoin, Absorica LD has the potential to improve patient adherence and long-term patient outcomes.

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INTRODUCTION

Before isotretinoin, no other acne therapy targeted all four pathogenesis factors of acne (including hyper-keratinization, sebum production, *Cutibacterium acnes* proliferation, and inflammation).[1,2] Rather, other non-isotretinoin treatments for acne are often used in combination to address multiple aspects of acne pathogenesis at once.[3] Isotretinoin, available in the US for almost four decades, is an oral retinoid recommended as a first-line treatment option for treating severe nodular acne.[3] In addition to severe nodular acne, oral isotretinoin is used for the treatment of moderate acne that is treatment-resistant or for the management of acne that causes physical scarring or psychosocial distress, or both.[3] Over time, oral isotretinoin has revolutionized the management of severe and recalcitrant acne patients due to its ability to markedly induce acne clearance coupled with its ability to achieve prolonged remission.[4,5] Isotretinoin is the only treatment for which a single course of therapy has demonstrated complete or near-complete clearance of acne lesions and prolonged remission in the majority of patients with severe recalcitrant nodular acne.[4,5]

Although traditional oral isotretinoin has transformed acne management, its administration has faced several challenges. Notably, the bioavailability of traditional oral isotretinoin is variable and highly dependent on food administration. Isotretinoin, like other vitamin A derivatives, is a highly lipophilic molecule and its absorption is enhanced by a high-fat meal.[6-8] Because of this, maximal absorption of traditional isotretinoin depends on consumption of a high-fat, high calorie meal. Pharmacokinetics of traditional isotretinoin were performed with a standardized high-fat, high-calorie meal containing 50 grams of fat and 800 to 1000 calories.[7,9] FDA guidance in 2002 recommended this test meal should derive approximately 150, 250, and 500 to 600 calories from protein, carbohydrates, and fat, respectively.[9] When taking traditional isotretinoin without a high-fat meal, fasting isotretinoin plasma levels can be 60 percent lower than fed conditions.[8] Furthermore, peak plasma concentrations of traditional oral isotretinoin between fed and fasted conditions can vary by a factor of nearly threefold, which may potentially affect both efficacy and safety.[6]

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Taking isotretinoin without a high-fat meal can reduce the effectiveness of a course of therapy. Although patients are advised to take traditional oral isotretinoin with a meal, many patients skip meals.[5,8] Adolescents and young adults, the predominant patient population receiving acne therapy, tend to exhibit inconsistent eating patterns. This inconsistent eating can introduce variability with gastrointestinal absorption after oral isotretinoin ingestion. Furthermore, very few patients consume a high-fat, high-calorie meal with each dose of isotretinoin twice a day throughout the 15- to 20-week course of therapy.[5,8] Failure to ingest each dose of traditional isotretinoin with a high-fat meal can result in decreased absorption of the dose, fluctuations in drug plasma levels, and decreased cumulative exposure to isotretinoin therapy.[5] If the target cumulative dose for isotretinoin is not achieved, patients are more likely to relapse and require subsequent courses of therapy.[4,10,11]

In order to improve the absorption and bioavailability of isotretinoin, advancements have been made with subsequent formulations. The initial brand formulation of oral isotretinoin, Accutane, was approved by the FDA in 1982. Accutane served as the reference comparator against which other subsequent formulations of oral isotretinoin were developed over time.[12] Since Accutane's patent expired in 2002, several branded generic formulations of oral isotretinoin have become available in the US. These formulations have all been officially rated as bioequivalent with Accutane. These branded generic formulations include Amnesteem (approved November 2002), Sotret (approved December 2002), Claravis (approved April 2003), Myorisan (approved January 2012), and Zenatane (approved April 2013).[12] In 2009, the manufacturer of Accutane discontinued availability of the drug in the US.

In 2012, Absorica became the second non-generic formulation (after Accutane) to be approved by the FDA. Absorica was a new formulation that aimed to increase gastrointestinal absorption levels by utilizing Lidose technology. Lidose technology is a lipid encapsulation technology in which isotretinoin is partially pre-solubilized in a lipid matrix.[13,14] This technology protects the active drug ingredient against air and moisture and increases the dissolution speed of the drug molecule, allowing for greater gastrointestinal absorption compared to other isotretinoin formulations when not administered by a high-fat, high-calorie meal.[13-16] Absorica demonstrated bioequivalence to Accutane in the fed state, enabling its approval through the 505(b)(2) pathway. In addition, Absorica exhibited improved absorption in the fasted state when compared to Accutane. Compared to a 60 percent reduction in bioavailability of Accutane when taken on an empty stomach, Absorica bioavailability was reduced by only 33 percent when administered on an empty stomach compared with concomitant administration of high-fat, high-calorie meals.[8,16] Despite this reduction in bioavailability and contrary to that for conventional isotretinoin, the Absorica package insert states that Absorica may be taken with or without meals.[15] In 2019, Del Rosso and coworkers provided clinical evidence supporting this statement demonstrating that consumption of Absorica in the fasted state resulted in a low relapse in the 2-year period following completion of a 20-week course.[17] In 2014, additional dosage strengths of Absorica were approved, which were unique and allow greater flexibility and precision in body weight-based dosing.

In an effort to further increase absorption, Absorica LD was developed using specific micronized technology and was approved by the FDA in 2019. Different from Absorica's Lidose technology, Absorica LD's micronization technology physically reduces the drug to micrometer size. Absorica LD is a micronized formulation of isotretinoin that delivers predictable absorption at a level two times greater than Absorica in a fasted state.[18] Absorica LD is the only micronized isotretinoin and has no generic equivalent.

Benefits of Micronization

With its micronization technology, Absorica LD demonstrated improved absorption, allowing for a 20 percent decrease in dose across the board compared to generic isotretinoin. At a 20 percent lower dose, Absorica LD 32mg demonstrated bioequivalent drug levels to Absorica 40mg in the fed state and twice the bioavailabilty in the fasted state.[18] Recommended daily dosage for Absorica LD should be individualized based on the patient's body weight and is recommended at 0.4–0.8mg/kg/day (20 percent less than the 0.5–1.0mg/kg/day for generic isotretinoin) in two divided doses with or without meals for a period of 15–20 weeks.[15] The American Academy of Dermatology (AAD) recommended a cumulative dose for generic isotretinoin of 120–150 mg/kg and the recommendation for Absorica LD is 20 percent less: 100–120mg/kg.[3] Adult patients whose disease is very severe with scarring or is primarily manifested on the trunk may require Absorica LD dosage adjustments up to 1.6mg/kg/day (20 percent less than the 2.0mg/kg/day for generic isotretinoin) in divided doses as tolerated.[15] The safety and efficacy of once daily dosing with Absorica LD has not been established.[15]

Traditional isotretinoin has poor aqueous solubility.[19] Micronization is a strategy that was developed in an effort to improve and maximize the dissolution rate of drug molecules with limited aqueous solubility. Micronization involves the physical process of reducing drug particles to micrometer size.[20] The micronization of isotretinoin substantially increases the surface area per particle compared to other isotretinoin formulations.[21,22] Through increased surface area, micronization increases the rate of isotretinoin drug dissolution.[21,22] With its micronization technology, Absorica LD demonstrates twice the plasma levels of isotretinoin compared with Absorica in the fasted state.[18] Thus, dose recommendations are different

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between Absorica LD and Absorica due to the advanced micronization technology of Absorica LD.

The enhanced absorption level of Absorica LD is based on two clinical trials comparing Absorica LD and Absorica pharmacokinetics. The pharmacokinetics of Absorica LD and Absorica were evaluated in two open-label, randomized, crossover studies in healthy volunteers: the fed bioequivalence and food effect study, and the fasting study.[18] In the fed bioequivalence and food-effect study, patients first underwent an overnight fast of ≥10 hours, and then either consumed a high-fat, high-calorie breakfast and were given Absorica 40mg or Absorica LD 32mg, or received no breakfast and were given Absorica LD 32mg. Of note, the high-fat, high-calorie meal used in the study was based on the FDA-stipulated meal and included 2 fried eggs, 2 strips of bacon, 4 oz of hash browns, 2 slices of buttered toast, and 8 oz of whole milk. In the fasting study, patients underwent an overnight fast of ≥10 hours and then received either Absorica 40mg or Absorica LD 32mg. Bioavailability was assessed by measuring area under the plasma concentration-time curve from time 0 to the time of last measurable isotretinoin concentration (AUC_{0-t}), area under the plasma concentration-time curve from time 0 to infinity ($AUC0_{-\infty}$), peak isotretinoin exposure (C_{max}), and time to peak isotretinoin exposure (T_{max}), in blood samples taken pre-dosing and over 96 hours post-dosing.

Overall, these studies demonstrated that the absorption of Absorica LD 32mg is superior to Absorica 40mg. The fed bioequivalence and food effect study showed that in under fed conditions, Absorica LD 32mg is bioequivalent to Absorica 40mg. This is demonstrated by the least squares geometric mean (LSGM) ratios for AUC_{0-t}, $AUC0_{-\infty}$, and C_{max} for fed-state Absorica LD 32mg versus fed-state Absorica 40mg. These LSGM ratios had 90% confidence intervals (CIs) that all fell within the 80 percent to 125 percent range for bioequivalence (Table 1).[18] Absorica LD 32mg, with its micronized technology, achieves similar plasma levels to Absorica 40mg in the fed state with a 20 percent lower dose.[18] Furthermore, in the fasted study, Absorica LD 32 mg was absorbed approximately twice as much as Absorica.[18] This is evidenced by the AUC_{0-t}, $AUC_{0-\infty}$, and C_{max} of fasted-state Absorica LD that were nearly double those for fasted-state Absorica (Table 2).[18] Absorica LD 32mg also produces consistent serum levels irrespective of gastrointestinal contents.[18] The promising results from these studies suggest that Absorica LD could be an alternative acne therapy without stringent food intake requirements.

Of note, the therapeutic efficacy of Absorica LD is based on a clinical trial comparing Absorica to generic isotretinoin.[15,23] A clinical trial has yet to be conducted with Absorica LD. In the phase 3 clinical trial comparing Absorica to generic isotretinoin, Absorica was shown to be non-inferior to

TABLE 1.

Pharmacokinetics for Fed State* Following Administration of Absorica LD 32mg and Absorica 40mg

Parameter	Treatment	Arithmetic Mean	LSGM	LSGM Ratio (%)	90% Confidence Interval
AU_{C0-t} (ng*hr/ml)	Absorica LD	10,209	9,915	95.07	91.88–98.36
	Absorica	10,693	10,430		
$AUC_{0-\infty}$ (ng*hr/ml)	Absorica LD	10,921	10,654	94.71	91.51–98.02
	Absorica	11,676	11,249		
C_{max} (ng/ml)	Absorica LD	646	597	104.09	96.27–112.55
	Absorica	596	573		

*Eating a standardized high-fat meal.
AUC_{0-t}: area under the plasma concentration-time curve from time 0 to the last measurable concentration;
$AUC^{0-\infty}$: area under the plasma concentration-time curve from time 0 to infinity; C_{max}: maximum measured plasma concentration;
LSGM: least squares geometric mean

TABLE 2.

Pharmacokinetics for Fasting State Following Administration of Absorica LD 32mg and Absorica 40mg

Parameter	Treatment	Arithmetic Mean	LSGM	LSGM Ratio (%)	90% Confidence Interval
AU_{C0-t} (ng*hr/ml)	Absorica LD	7,485	7,289	198.62	175.19–225.17
	Absorica	3,833	3,670		
$AUC_{0-\infty}$ (ng*hr/ml)	Absorica LD	8,016	7,807	196.33	172.86–222.98
	Absorica	4,164	3,977		
C_{max} (ng/ml)	Absorica LD	539	508	196.33	172.86–222.98
	Absorica	238	231		

AUC_{0-t}: area under the plasma concentration-time curve from time 0 to the last measurable concentration;
$AUC^{0-\infty}$: area under the plasma concentration-time curve from time 0 to infinity; C_{max}: maximum measured plasma concentration;
LSGM: least squares geometric mean

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generic isotretinoin in the fed state.[15,23] The study included 925 patients with severe recalcitrant nodular acne who were randomized 1:1 to receive Absorica or a generic traditional oral isotretinoin capsule. The two primary endpoints of the study included the change in total nodular facial and truncal lesion count from baseline to 5 months, and the percentage of patients reporting at least 90 percent reduction in nodular facial and truncal lesion count from baseline to 5 months. The efficacy of Absorica and generic isotretinoin were comparable; the change in nodular lesion count from baseline was -15.68 and -15.62 for patients taking Absorica or generic isotretinoin, respectively.[15,23] In addition, 70 percent of patients taking Absorica and 75 percent of patients taking generic isotretinoin achieved at least 90 percent reduction in nodular facial and truncal lesion count from baseline.[15,23]

Food Effects

As previously mentioned, the absorption levels of Absorica LD are less dependent on food intake compared to other forms of oral isotretinoin. This improvement in absorption addresses the critical issue of patient adherence with concomitant ingestion of oral isotretinoin with food or a specified meal. Because isotretinoin is a highly lipophilic compound, its gastrointestinal absorption is enhanced by solubilization by dietary fat.[6] Traditional oral isotretinoin formulations show a stark decrease in plasma levels in the fasted state compared to the fed state.[8] Therefore, traditional formulations of isotretinoin are recommended to be taken with food, preferably a high-fat, high-calorie meal.[8] However, adolescents and young adults, the main recipients of acne treatment, tend to have inconsistent eating behaviors. This irregularity of food consumption can influence gastrointestinal absorption of oral isotretinoin after ingestion.

The irregularity of food consumption is particularly prevalent among adolescents. Many adolescents frequently skip meals, most commonly breakfast. In a survey of 1,001 high school students with a mean age of 16.1 years, 59 percent indicated they skipped breakfast more than 3 times the previous week.[24] In another national report, 30 percent of students aged 15 to 18 years skipped breakfast on any given day.[25] Common reasons cited for skipping breakfast included lack of time, lack of hunger, or dieting to lose weight.[25] In a survey obtained from adolescents taking isotretinoin, 71 percent report actually ingesting isotretinoin with food.[26] The current diet fad of intermittent fasting has many adults skipping breakfast as well.

Furthermore, adolescents are unlikely to consume the recommended fat and calorie amounts as outlined by the FDA-stipulated meal. The FDA offered guidance to industry suggesting that meal studies to evaluate bioavailability and bioequivalence utilize a high-fat (50 percent of total caloric intake) and high-calorie (800 to 1000 calories) meal; the meal should include approximately 50 grams of fat.[9] In a survey of adolescents using oral isotretinoin, the average fat grams ingested with oral isotretinoin was 18 grams (low 2g; high 53g; median 16g) and average calories ingested with oral isotretinoin was 483 calories (low 48 calories; high 1,220 calories; median 444 calories).[26] Only 3 percent of patients in the survey report actually ingesting oral isotretinoin with a high-fat meal.[26]

The aforementioned data demonstrate that it is likely not realistic to expect patients on oral isotretinoin to consistently take the medications with the FDA recommended high-calorie and high-fat diets. Even if clear drug administration instructions are given and understood, patients may dismiss the instructions or forget them over the course of treatment, especially if not repeatedly emphasized. In addition, physicians may feel uncomfortable recommending such an unhealthy diet to their patients. By ingesting oral isotretinoin on an empty stomach or with a meal of insufficient fat or calories, patients may experience decreased absorption of the dose and fluctuations in drug plasma levels.[5] Over time, this can lead to decreased cumulative exposure to isotretinoin therapy and impact therapeutic outcome, including long-term success.[5] Patients who do not achieve the target cumulative dose are more likely to relapse and require subsequent courses of isotretinoin therapy.[4,10,11]

By eliminating the "food dependence" factor of oral isotretinoin, Absorica LD has the potential to improve patient adherence and achieve overall better therapeutic outcomes. Absorica LD achieves consistent serum levels irrespective of gastrointestinal contents.[18] Because of this, adolescents and young adults, with their poor and irregular eating habits, will be relieved from planning doses around concomitant ingestion of food. Busy adults can also have inconsistent eating habits that have to adapt to varying work and personal life schedules, so they may also benefit from a treatment that is not food dependent. Importantly, diets that are either high in protein or low in calorie, which are not conducive for absorption of traditional isotretinoin, can be followed on Absorica LD without potential therapeutic consequence. Patients have the ability to engage in a healthier diet while on oral isotretinoin medication and still maintain adequate dose levels. Physicians can also recommend a healthier diet to their patients on Absorica LD, and they will no longer be obligated to continuously emphasize the importance of co-administration with food throughout the duration of treatment.

Safety Profile

Absorica LD is indicated for the treatment of severe recalcitrant nodular acne in non-pregnant patients.[15] Because of significant adverse reactions associated with its use, Absorica LD should

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TABLE 3.

Dosage Differences Between Absorica LD and Non-micronized Isotretinoins	
Non-micronized Isotretinoin	Absorica LD With Micronized Technology
10 mg	8 mg
20 mg	16 mg
30 mg	24 mg
40 mg	32 mg

be reserved for patients with severe nodular acne who are unresponsive to conventional therapy, including systemic antibiotics.[15] Like other forms of isotretinoin, Absorica LD is limited by the timing of a potential second course; if a second course of Absorica LD is needed, it is not recommended before a two-month waiting period because the patient's acne may continue to improve following a 15- to 20-week course of therapy.[15]

Absorica LD has two contraindications. First, as with all oral isotretinoin, Absorica LD is a teratogen and must not be used by female patients who are or may become pregnant.[15] Major congenital malformations, spontaneous abortions, and premature births have been documented following pregnancy exposure to isotretinoin. Because of the risk of teratogenicity and to minimize fetal exposure, Absorica LD is available only through a restricted program under a Risk Evaluation and Mitigation Strategy (REMS) called iPLEDGE.[15] In addition to its pregnancy contraindication, Absorica LD is also contraindicated in patients with hypersensitivity to isotretinoin (or Vitamin A, given the chemical similarity to isotretinoin) or any of its components.[15]

Several other important considerations exist with Absorica LD administration. Notably, Absorica LD and Absorica are not legally substitutable by each other or by any traditional oral isotretinoin product.[15] As previously discussed, the bioavailability and recommended dosage are different (Table 3). In addition, checking laboratories during treatment is important to monitor for possible side effects. Routine monitoring of liver function tests, serum cholesterol, and triglycerides at baseline and again until response to treatment is established, is recommended.[15] Routine monitoring of complete blood count is not recommended.[15] The iPLEDGE program mandates monthly office visits for all patients with Absorica LD and all other isotretinoin products.

CONCLUSIONS

While traditional oral isotretinoin has revolutionized acne management, its food-dependent nature and varying bioavailability represent critical challenges of its administration. Absorica LD, with its unique micronized technology, exhibits enhanced gastrointestinal absorption and bioavailability compared to Absorica and previous forms of oral isotretinoin.[18] Absorica LD produces consistent serum levels irrespective of gastrointestinal contents.[18] By removing the "food effect" of previous formulations of oral isotretinoin, Absorica LD relieves patients from the requirement to ingest oral isotretinoin with a high-fat meal. Patients are able to administer Absorica LD on an empty stomach or with healthier meals (ie, low-fat, high-protein) without experiencing negative therapeutic consequences. With Absorica LD, we anticipate improved patient adherence and therefore improved long-term therapeutic outcomes.

DISCLOSURE

Dr. Armstrong has served as a research investigator and/or scientific advisor to AbbVie, BMS, Incyte, Leo, UCB, Janssen, Lilly, Novartis, Ortho Dermatologics, Sun, Dermavant, Dermira, Sanofi, Regeneron, Pfizer, and Modmed.

Madison Jones has nothing to disclose.

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Dr. Baldwin has served as a speaker, investigator, consultant or advisory board member for Almirall, Cassiopea, EPI, Galderma, Johnson and Johnson, La Roche-Posay, Ortho Dermatologics, Sol-Gel, Sun, and Vyne.

Dr. Stein Gold has served as investigator, advisor, and/or speaker for Sun, Almirall, Ortho Derm, Galderma, and Cutera.

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