

Possible Integrative Approaches to Treatment of Insulin Resistance

Combining Traditional and Non-Traditional Care

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Revised January 2, 2024

Table of Contents

1. Introduction.....	3
2. Insulin Resistance.....	4
3. Diagnosis of Insulin Resistance.....	5
4. Integrative Treatment of Insulin Resistance.....	7
5. Proprietary Blends in the Treatment of Insulin Resistance.....	9
6. Stress Management in Insulin Resistance Management.....	12
7. Results and Discussion.....	14
8. Proposal for Future Research.....	14
9. Conclusion.....	15
10. References.....	17

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1. Introduction

Based on various academic publications by certified academic authors, most human cells use glucose as their primary substance; hence, cellular uptake requires insulin. Insulin signaling is, therefore, a very vital aspect for these tissues. With that said, insulin sensitivity decline causes insulin resistance due to the alterations happening in the molecular paths. Insulin resistance can lead to several metabolic disorders, such as metabolic syndrome and type 2 diabetes. It disrupts insulin signaling, which prevents glucose from entering muscle cells and fat cells effectively. Despite the primary cause of insulin resistance not being entirely established, various research has been conducted, and some significant mechanisms such as insulin receptor mutations, mitochondrial dysfunction, oxidative stress, and endoplasmic reticulum have been brought forward as promoting factors.

Additionally, the clinical implications of insulin resistance go over and beyond its primary connection to diabetes and link with other medical complications for instance: obesity, cardiovascular diseases, and fatty liver disease, to mention a few. This multifaceted nature of insulin resistance calls for a better understanding of the health condition to develop appropriate medical management approaches. This literature review seeks to dive into the intricate web of insulin resistance, focusing mainly on its far-reaching health impacts and possible treatment options. By exploring the interconnection between insulin resistance and the coexisting factor, the review aims to shed more light on the need for the clinical adoption of integrative approaches. Generally, the primary objective of the literature review is to effectively examine existing research and medical evidence relating to proper insulin resistance management. Further, the literature review aims to dissect the effectiveness of lifestyle interventions,

conventional medications, and the emerging role of proprietary blends concerning the medical issue, offering insights and more personalized avenues for managing insulin resistance. The literature review will be helpful for academic reasons and a valuable basis for future research and medical expertise while engaging in the complex landscape of fighting against insulin resistance.

2. Insulin Resistance

To have a solid understanding of insulin resistance, knowing what insulin is by itself is of great importance. According to various academic authors, insulin is a vital hormone the pancreas produces. The primary role or function of insulin is to facilitate the entry of glucose into body cells found in the muscles, fat, and liver, where the glucose is then utilized for energy (Sanchez et al., 2020). The glucose that is present in human blood is gained from the foods they consume. The liver plays the role of producing glucose at various times, such as when one is fasting (Sakurai et al., 2022).

Additionally, when blood glucose levels rise in the body based on various factors, such as after a meal, the pancreas releases insulin to lower the high blood glucose to the normal range. Insulin resistance comes into the picture based on the comprehensive introduction concerning insulin above. Various scholars define it as when the liver, fat, and muscle cells do not respond as well as expected and cannot take up glucose from the blood. The inability of the cells to take up glucose results in more insulin production by the liver to help glucose enter the cells and lower the high glucose concentration in the bloodstream. The pancreas continues to produce more insulin until the glucose levels in the body are stabilized.

In cases of insulin resistance, the normal process of glucose regulation is disrupted or impaired. When cells are not taking up the glucose in the bloodstream, it means glucose buildup

in the bloodstream, and this triggers the contemporary mechanism of the body whereby the pancreas is forced to create or produce more insulin to counter the high glucose concentrations in the blood. This countermeasure might result in the condition known as prediabetes, a health state in which the blood sugar levels are above the ordinary ranges. If high blood glucose levels are not properly managed with appropriate medical care or are left untreated for an extended period, the condition can worsen and lead to serious health complications. In that case, the condition translates to type 2 diabetes (Kudva & Nair, 2020). Further, linking the issue of insulin resistance to other health complexities, it is also associated with obesity. Excess body fat around the abdomen has been established by various scholars as an enhancing factor to insulin resistance.

Cardiovascular disease is closely associated with insulin resistance, as elevated blood glucose levels can damage blood vessels over time, ultimately leading to serious heart conditions. Lastly, more so in women, insulin resistance has been identified to be a contributing factor to hormonal disorder or a widely known polycystic ovarian syndrome (PSOS) that translates to irregular menstrual cycles, among other medical issues. With the proper understanding of these critical health issues, the literature review will aid in establishing more reliable insulin resistance management approaches or interventions.

3. Diagnosis of Insulin Resistance

According to the case study conducted by Dr. Norbert Ketskes, insulin resistance cannot be detected based on how a person feels at any given moment. Instead, it is highly recommended to go for proper blood tests that will aid in assessing blood sugar levels. Based on a medical publication by the National Institute of Diabetes and Digestive and Kidney Diseases entirely aligns with (Ketskes, 2023) work in that it states that insulin resistance does not have symptoms.

The article adds that it is only in some individuals with prediabetes who may show darkened skin in the armpit or the back side of their neck, a medical issue known as acanthosis nigricans (Cefalu et al., 2022). Additionally, the article states that other people, who make up a minimal percentage, experience many small skin growths around the same areas as those with acanthosis nigricans. According to the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), professional medical practitioners use blood tests to identify whether one might have prediabetes. However, the test is only partially used for insulin resistance since the proper and accurate test for insulin resistance is highly complicated and mainly used for research purposes (Barata et al., 2019). The most commonly used tests by doctors are the fasting plasma glucose (FPG) test and the A1C test to establish prediabetes. The other available test is the oral glucose tolerance test (OGTT), which is not widely used because of the costs involved and is not easy to give.

According to the Mayo Clinic publication concerning insulin resistance, is also by Dr. Norbert and Dr. Christina's work shows that there are no symptoms for people with medical issues. Despite the existence of more accurate physical symptoms, there are signs that doctors can use to follow apart from the skin tags, including a waistline of more 40 inches in men and more than 35 inches in women, blood pressure reading of 130 over 80 or above and a fasting glucose levels equal or above 100 milligrams per deciliter or a blood glucose levels equivalent or above 140 milligrams per deciliter two hours after a glucose load test (Wang et al., 2019). After the medical practitioner has ascertained the above symptoms, they can follow up and conduct physical examinations and numerous blood tests to identify insulin resistance accurately.

Moving on, it is also important to evaluate one's family medical history since a genetic predisposition to insulin resistance enormously contributes to the development of the medical

condition. Particular ethnic backgrounds, such as Latino and Native American's, for instance, are linked to having high chances of developing insulin resistance (Šimonienė et al., 2020). Using the insights above, medical professionals or doctors, in particular, will better understand how to navigate the difficulties associated with insulin resistance diagnosis.

4. Integrative Treatment of Insulin Resistance

While linking this particular part of the literature review to the case study provided by Dr. Norbert Ketskes on insulin resistance, the patient involved is a female who was diagnosed with Polycystic Ovary Syndrome (PCOS). Just as stated above, in the diagnosis process of insulin resistance, the patient showed irregular periods and ovarian cysts. To regulate her menstrual cycles, she was prescribed hormonal birth control pills (Ketskes, 2023). Additionally, upon her medical background check, it was identified that her family had a history of type 2 diabetes for both parents in regards to the physical symptoms, our patient did not have physical signs, but as documented, she complained of persistent fatigue, weight gain, and irregular menstrual cycles (Šimonienė et al., 2020). It was classified as overweight upon clinical examination, and the fasting blood glucose level was 115mg/dl. Apart from the prescribed hormonal birth control pills, additional measures were initiated, and they comprised an oral-diabetic medication (metformin) (Roden & Shulman, 2019). Further treatment was offered to the patient, comprising various proprietary blends with unique components and dosage protocols.

According to a medical publication by Cleveland Clinic concerning the management and treatment of insulin resistance, the article specifies that since not all insulin resistance contributing factors are treatable, such as genetic factors and age, the primary treatment options comprise lifestyle modifications. Some lifestyle modifications discussed by the Cleveland Clinic publication include eating a healthy diet. This lifestyle modification approach can be tailored to

fit personal requirements with the help of Professional healthcare providers and nutritionists advising on the proper meal, such as the suitable carbohydrate intake to prevent excess insulin production (Morey et al., 2022). The other lifestyle modification that can be very important is engaging in physical activities. Being physically active is vital since it facilitates increased glucose use and promotes muscle insulin sensitivity. The third lifestyle modification, as per the Cleveland Clinic publication, is that losing excess weight helps manage insulin resistance since a study conducted by the clinic outlined that losing 7% of excess weight translated to reducing the onset of Type 2 diabetes by 58%.

Generally, by implementing the lifestyle recommendations of Cleveland Clinic, the long-run results comprise increased insulin sensitivity levels, reduction of blood glucose levels in the bloodstream, reduced blood pressure, and decreased triglycerides and LDL cholesterol levels. Linking these particular recommendations to the case study provided by Dr. Norbert, the conventional treatment approaches that were suggested to the patient to help reverse insulin resistance and prevent type 2 diabetes are aligning. The patients in the case study were advised to exercise five or more days a week, at least 30 minutes a day (Li et al., 2022). The patient also reported to have a healthy weight and practice healthy eating habits comprising fruits, vegetables, and whole grains. The last recommendation to the patient, as per the case study by Dr. Norbert, was to take medications to aid in maintaining the blood sugar levels. According to a Cleveland Clinic publication, the medication for treating insulin resistance was not precisely comprised of blood pressure medication, metformin for diabetes, and statins to lower LDL cholesterol.

Regarding other reliable publications, such as the Mayo Clinic article concerning insulin resistance, the report states that reversing insulin resistance and preventing type 2 diabetes is

possible through medication lifestyle changes, and, in other instances, combining both options is necessary. The article aligns with the Cleveland Clinic work and the case study by Dr. Ketskes in that they all offer similar recommendations to deal with the medical issue of insulin resistance (Pataky et al., 2021). Additionally, getting the right body weight as per practitioner's guidance is established as an effective way of managing insulin resistance; the Mayo Clinic advises that losing weight using drastic means is not a recommended way that people should practice.

According to a medical article from the National Library of Medicine, obesity is associated with an elevated release of fatty acids into the bloodstream, contributing to insulin resistance. Therefore, weight reduction plays a crucial role in combating insulin resistance. From research conducted by the institution, it was established that improvement in insulin sensitivity after weight reduction might have resulted from the reduction in the pro-inflammatory and stress response in skeletal muscle. The study also found that a 30% reduction in fatty acid levels after weight loss led to a 60% improvement in insulin sensitivity, regardless of whether participants improved their aerobic fitness through exercise. On the contrary, insulin sensitivity is not enhanced when a reduction in fatty acid mobilization does not accompany the weight loss process (Smith et al., 2020). It is evident that physical activities, as advised by medical practitioners, can positively impact managing insulin resistance.

5. Proprietary Blends in the Treatment of Insulin Resistance

From the case study provided by Dr. Norbert Ketskes, the patient was prescribed to use various blends, each consisting of unique components, all aiming to resolve the patient's medical condition. The first blend prescribed to the female patient was a combination of silica, vitamin C, and trace minerals. A medical publication done by the National Library of Medicine highlighted that the use of ascorbic acid supplements lowers blood sugar levels, enhance insulin synthesis

and secretion, and, in the long run, reduces insulin resistance and lowers the chances of developing type 2 diabetes (Shi et al., 2020). These particular supplements face the challenge of needing more studies to back up the research. Medical experts further guided the patient to use the second type of blend, which consisted of black seed oil, Turmeric, Resveratrol, Apple cider vinegar D-ribose, and Aloe Vera. All the ingredients in this particular blend each played a particular role in aiding the patient fight insulin resistance or, in other words, manage her condition (Mariwala et al., 2021). According to a Healthline publication reviewed by Debra Rose, the black seed oil, a component that was used to make the second blend for the patient, also known as the *N sativa* oil or black cumin oil, can enhance insulin production, glucose tolerance, and beta cell proliferation to mention a few (Ketskes, 2023). The third proprietary blend that our patient was advised to use was a combination of N-acetyl L-tyrosine, Anhydrous Caffeine, Velvet Bean Seed, Pine Bark, Curcumin and Vitamin D. All these components each played a huge role in the recovery process, for instance, N - acetyl L-tyrosine is an amino acid precursor it has the effect of stress modulation. The caffeine component raises body energy levels because of its stimulating effect. Additionally, recommending these blends to the patient was supported by the well-known role of curcumin in improving metabolic health (Ketskes, 2023). Furthermore, a study by Zou et al. demonstrated that curcumin enhances insulin sensitivity and boosts energy expenditure in individuals on a high-fat diet, reducing the risk of obesity

Further, the fourth proprietary blend had only three components, namely, Vitamin C, Zinc and Vitamin D3. Briefly, Vitamin C and D3, as used in other blends that were prescribed to our patient in the case study, show that they are vital components in insulin resistance management, and it shows how metabolic health is such a vital aspect in the entire management of the health

issue (Ketskes, 2023). The final component of this blend, zinc, is essential for numerous enzymatic reactions in the body. Similar to vitamins C and D3, it plays a vital role in supporting overall metabolic function.

The fifth proprietary blend, based on the components used, is a supper blend that aims at enhancing one's digestive health based on the superfoods and fiber sources used. Additionally, the blend is a great source of nutrients and bioactive components to the patient's body. The specific components used include Inulin, Green Banana, Apple Fiber, Bacillus coagulans, Spirulina, Wheat Grass, Alfalfa Leaf, Flaxseed, Psyllium Husk Powder, Chlorella, Broccoli, Kale, Spinach, Green Cabbage, Parsley, Aloe Vera, Cayenne Pepper, Blueberry Powder, Pomegranate Seed Powder, and MCT Coconut Oil Powder.

Proprietary blend number six mainly focused on metabolic functioning again showing how important this particular aspect is vital in insulin resistance management. The particular components that were used include B-Nicotinamide Adenine Dinucleotide (NAD⁺) involved in cellular energy production and, as mentioned, enhances metabolic functions. Other components include Magnesium and Trace Minerals, Quercetin, Vitamin D, Vitamin C, and Vitamin K2 (Ketskes, 2023). The final blend, as per the case study, proprietary blend seven, is comprised of two components: Bovine Collagen and Hydrolyzed Bovine Colostrum. For the first component, bovine collagen is a great source of protein that enhances the joint and skin health of the patient, whereas hydrolyzed bovine colostrum contains immune-boosting elements and other bioactive elements. According to a publication by Jamie Schneider, Italy has scientifically proven that both of the two components used in proprietary blend seven have both immune-supporting and skin-related benefits. Although various blends may be recommended to the patient, it is important to seek professional guidance before using proprietary blends. Additionally, the dosage

and frequency of these blends should be carefully monitored. The adjustments regarding the prescribed dosage need to be gradual, with the main aim of this practice being to enable the patient's body to adjust to the blended components. The gradual approach will also enable medical experts to monitor the response from the blends and then optimize the attained therapeutic benefit of each blend. In terms of incremental adjustments, this is a vital approach in that, epically, practitioners can facilitate a phased introduction of the blends while monitoring and lowering the instances of adverse reactions. Additionally, various blends call for different frequencies in variation (Vanni et al., 2021). Depending on the nature of the components used, medical practitioners can advise on the variation process. Lastly, these particular blends in insulin resistance management are advantageous because they can be tailored to fit one's needs. Existing research states that it is possible to use specific proprietary blends with the guidance of a medical expert.

6. Stress Management in Insulin Resistance Management

The case study mentioned stress management as an additional treatment approach. Based on various scholars, chronic stress can cause leaner body mass loss, visceral fat accumulation, and insulin resistance, among other medical conditions. Hence, people need to manage their stress levels to manage insulin resistance instances (Wondmkun, 2020). According to an article by Diabetes UK, when one feels stressed, the human body responds by releasing stress hormones, for instance, cortisol and adrenaline. These particular stress hormones make it harder for the body to function optimally because they affect how insulin works. To better understand the entire aspect of stress, according to the World Health Organization, stress has been defined as mental tension or the state of worry arising from a contradicting or problematic situation.

Additionally, according to Chokshi, stress has been established as an acceptable part of everyday life. However, based on available data, more than half of Americans experience stress of up to extreme levels. Further, the article discloses that in recent years, stress levels around the EU and the UK have risen (Chokshi, 2019). In order to develop a long-lasting stress management approach to managing insulin resistance, we must also understand the two types of stress (Al-Trad et al., 2019). Acute and Chronic types of stress have varied impacts on human health. Acute stress is short-term experienced in one-off situations, while chronic stress is term consistent and mainly overwhelming. Stress affects insulin resistance by affecting one's metabolic health by increasing blood glucose levels. Hence, as established by various scholars, chronic stress is unhealthy and can influence ones quality of life.

Developing a practical stress management approach is paramount in managing insulin resistance. Various strategies have been approved practically and from medical studies as having the ability to mitigate stress and enhance insulin sensitivity. According to the Mayo Clinic, if you are experiencing chronic stress, it is important to take appropriate measures to manage it. This includes identifying patterns, seeking guidance from medical professionals, and getting support from psychologists, clinical social workers, or support groups to address stressors. By managing stress effectively, you can also work toward overcoming insulin resistance with additional medical interventions when needed.

Further, the other techniques that can be used as alternative stress management and to improve insulin sensitivity include getting adequate sleep. Getting quality or adequate sleep enhances a person's overall metabolic health and is critical to managing stress levels. On the other hand, sleep depreciation impacts human hormonal balance, which contributes enormously to insulin resistance. Another effective method for managing stress, as identified by academic

authors, is the use of social support groups or networks. These groups provide meaningful connections, encourage participants to share their experiences, and offer emotional support, which can help reduce stress levels and, over time, address insulin resistance. In summary, it is essential to acknowledge and address the strong link between stress management and insulin resistance.

7. Results and Discussion

Based on the results obtained from the case study provided by Dr. Norbert, our patient of interest had started to show recovery signs after three months of medical and holistic intervention. The fatigue levels dropped considerably as per the patient's revelation; she cut down weight to 158 lbs. from 180 lbs (Ketskes, 2023). Further, upon clinical examinations, it was evident that the blood glucose levels posted a commendable change whereby her fasting levels had dropped to 99 mg/dL compared to the initial measures that stood at 115mg/dL (Ketskes, 2023). Further, the hemoglobin A1C was recorded to be a degree from 6.2% to 5.8% (Ketskes, 2023). from the results posted by the patient from the case study and intertwining that with the studies posted by various authors such as Mayo Clinic concerning the various insulin resistance management approaches, it can be concluded that integrative approaches backed up by conventional treatment, lifestyle interventions, and proprietary blends can be used as effective measures to address insulin resistance.

8. Proposal for Future Research

Despite the literature review having explored numerous possible integrative approaches to treating insulin resistance, there is still more room for future research. In establishing the long-term treatment impacts, more studies or research need to be conducted tracking patients'

response to all possible insulin resistance treatments extending over a long period to come up with accurate insights into the reliability and areas that might require improvement. Additionally, more research must be conducted to facilitate the establishment of safety measures, especially on proprietary blends. The blend safety research will focus on establishing the side effects and evidence-based guidelines.

When it comes to optimal protocols, as emphasized by the Mayo Clinic, further research is essential to provide a clearer understanding of the ideal dosages, frequency, and duration of both lifestyle interventions and proprietary blends. Such insights are crucial to ensuring these measures deliver maximum benefits while minimizing potential risks. Moreover, future studies should focus on expanding the research base to examine how treatment approaches may differ across various geographical regions, considering cultural, environmental, and lifestyle factors. It is equally important to address economic aspects by exploring cost-effective solutions and assessing the broader benefits of incorporating these strategies into standard healthcare practices. By diversifying and deepening the research, we can develop more tailored, accessible, and effective approaches to address insulin resistance on a global scale.

9. Conclusion

In conclusion, the literature review highlights the multifaceted nature of insulin resistance and its contribution to other health-related issues such as type 2 diabetes. The literature review highlighted the connection between insulin resistance and related conditions, including obesity, PCOS, and cardiovascular diseases, among others. It also explored potential treatment approaches for insulin resistance, such as lifestyle modifications, medications, and specific proprietary blends. Using the presented case study by Dr. Norbert, the discussed insulin resistance integrative approaches have been exemplified and brought out reliable insights. A

holistic approach to insulin resistance treatment has been established using other medical research articles such as the Cleveland Clinic and Mayo Clinic work. Conducting further medical research and exploration will be a facilitator towards understanding the safety, long-term impacts, and optimal protocols of discussed integrative strategies. The future research proposal will be patient-centered, highlighting the transformative potential of integrative care in managing or treating insulin resistance and enhancing the general wellness of the people.

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