

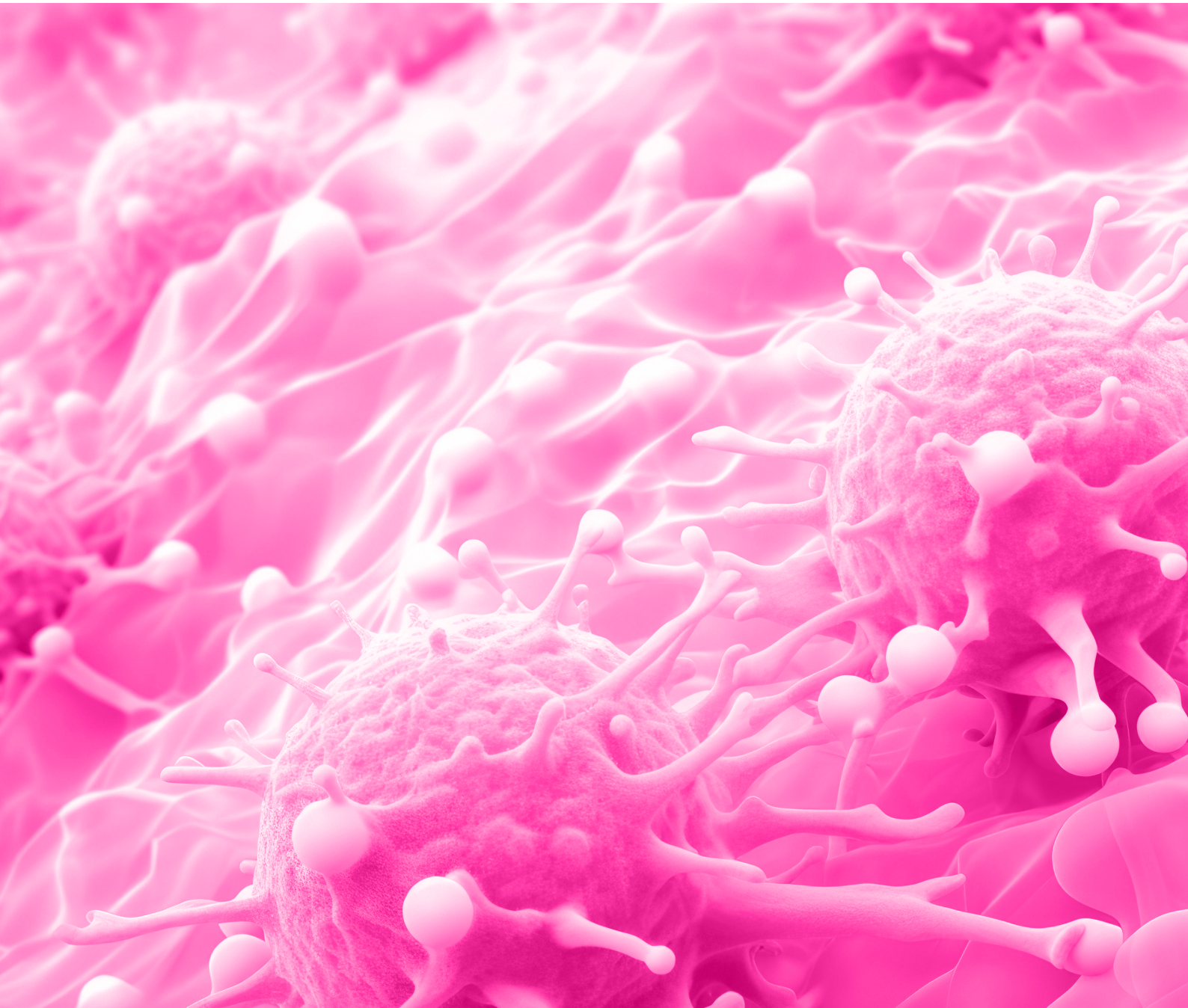
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# CANXIDA RECHARGE (FORMULA RCH)

WHITE PAPER



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The aim of this white paper is to provide an overview of Candida, the diseases it can cause, and how related symptoms can be overcome by CanXida ReCharge (Formula RCH). The scientific literature surrounding Candida and CanXida ReCharge's (Formula RCH) formulation is reviewed.

## INTRODUCTION

Candida is a genus of fungi that can cause disease in humans<sup>1</sup>. These diseases occur at many body sites, including the oral cavity, skin, and gut and pose a significant clinical challenge. The incidence of fungal infections, including those caused by Candida, has increased in recent years<sup>2</sup>. Furthermore, Candida strains have developed resistance to some of our most long-standing antifungal treatments<sup>3-5</sup>. Candida infections can cause mild symptoms but can progress to severe diseases like sepsis if left untreated<sup>1</sup>. Chronic Candida infections are common, and Candida is a problematic microbe to remove from the body once established. Thus, individuals with Candida can experience a significant loss of quality of life for long periods of time. Symptoms of Candida overgrowth include bloating, diarrhea, nausea, brain fog, fatigue, and joint pain, among others<sup>2</sup>.

Several risk factors put individuals at risk for developing Candida overgrowth and infections. These include prolonged antibiotic use, co-morbidities like cancer and diabetes, age, hormonal imbalance, and diet<sup>1</sup>. Considering the huge potential for Candida to negatively affect our health, understanding and addressing these risk factors is crucial for preventing Candida and determining effective treatment strategies.

## CANDIDA AND OVERALL HEALTH

Symptoms of Candida are diverse and wide-reaching, making it difficult to diagnose. Some symptoms can be localized to a particular body site, while others have a more general effect<sup>1</sup>. Candida affects quality of life through many mechanisms. Below, we provide an overview of Candida's effect on gut health, mental health, and energy levels.

### GUT HEALTH

Candida colonization of the gut can lead to severe discomfort, dietary restriction, immune system depletion, and depletion of healthy microbes<sup>6</sup>. Candida is a highly adaptive microbe capable of using varied carbon sources for energy and scavenging nutrients from its environment. Candida mainly thrives off glucose and can outcompete immune cells for access. This is significant, as immune cells important for attacking Candida rely on glucose as a source of fuel. By sequestering glucose, Candida can deplete the local immune system<sup>7</sup>. Furthermore, Candida infection causes sugar cravings, which can have a negative effect on nutrition but also feeds Candida the resources it needs to continue growing. Candida can directly scavenge minerals like iron<sup>8</sup> and zinc<sup>9</sup> from our cells and inhibit liver function which is required for production of digestive enzymes<sup>10</sup>.

Nutrients from food are absorbed into the bloodstream through the wall of the small intestine<sup>11</sup>. Candida directly adheres to and attacks the lining of the intestine, causing inflammation and preventing nutrient uptake. Candida overgrowth depletes levels of good microbes that are essential for our health<sup>12</sup>. This affects nutrition but can also have a negative effect on our mental health. Indeed the "gut-brain axis" and its impact on mental health is now well-established<sup>13</sup>. For example, probiotics (good gut bacteria) are considered a treatment for depression and are sometimes labeled as "psychobiotics"<sup>14</sup>.

A close-up, profile view of a woman's face, looking upwards and to the left. Her hair is blonde and styled in a bun. The lighting is dramatic, with a strong pink/magenta glow illuminating her face and hair. The background is dark and out of focus. The Canxida logo is centered over the lower part of her face.

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## **MENTAL HEALTH AND COGNITION**

Candida can affect cognitive function and mood through both direct and indirect methods. Dealing with chronic illness is damaging to mental health for many reasons. Constantly experiencing discomfort or pain negatively affects mood and can leave individuals with a negative outlook. Furthermore, debilitating illnesses mean individuals cannot take part in activities which once brought them joy. Exercise is increasingly recognized as essential for good mental health and is often enjoyed as part of a healthy social life<sup>15</sup>. Candida infection can make it difficult or impossible for individuals to engage in meaningful exercise and regular social activities. Chronic infections can leave individuals feeling isolated and hopeless<sup>16</sup>.

Candida infections can impair cognitive function<sup>17</sup>, negatively affecting work performance and one's ability to enjoy hobbies. Fungal infections of the brain are increasingly common and can cause Alzheimer's-like symptoms<sup>18</sup>. In severe cases Candida can infect the central nervous system (CNS) causing accumulation of immune cells and cleaved amyloid beta (A $\beta$ ), a causative agent of Alzheimer's disease, leading to impaired memory<sup>17</sup>. Candida induces an inflammatory response in the brain<sup>19</sup>, which may impair cognition and memory, especially in older adults experiencing chronic infections<sup>20</sup>.

## **ENERGY AND METABOLISM**

As mentioned above, Candida in our digestive system can affect the uptake and abundance of essential nutrients such as glucose and minerals. This negatively affects our metabolism as crucial ingredients for biochemical processes are lacking<sup>21,22</sup>. This is significant for the functioning of the immune system, but also in our general fitness and energy levels. Candida is associated with metabolic disorders like obesity<sup>23</sup>, and a mouse study linked a Candida species to the obesity associated with a high-fat diet<sup>24</sup>. In this instance, antifungals reduced obesity caused by Candida producing free fatty acids from food<sup>24</sup>. Obese individuals are also typically deficient in a variety of nutrients that Candida depletes<sup>25,26</sup>. People with diabetes are at increased risk of contracting a Candida infection<sup>27</sup>, and it is plausible that Candida-induced sugar cravings may play a role in the development of the disease.

## **HOW CANXIDA RECHARGE (FORMULA RCH) CONTROLS CANDIDA LEVELS AND ENHANCES OVERALL WELL-BEING**

CanXida ReCharge (Formula RCH) contains 36 high-quality bio-available ingredients that help to restore gut balance, mental clarity, and energy levels. This is achieved through the combined detoxifying, anti-oxidant, immune-supporting, and metabolism-boosting action of its ingredients, which can help with weight management and cover nutritional deficiencies.

Below, we summarize all of the ingredients contained in CanXida ReCharge (Formula RCH) and the scientific literature that supports their health benefits.

## INGREDIENT BREAKDOWN

CanXida ReCharge (Formula RCH) contains 21 vitamins and minerals, which provides better nutrient coverage than some dedicated multivitamin supplements. These nutrients play broad physiological roles in the body, which are often compromised in malnourished individuals and those with Candida overgrowth or infection.

### VITAMINS

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#### VITAMIN C

This nutrient is a functional anti-oxidant<sup>28</sup> that may aid in preventing cancers of the digestive system<sup>29</sup>. Vitamin C has an essential function in the immune system by promoting neutrophil migration<sup>30</sup> and helping with recovery by facilitating collagen expression<sup>31,32</sup>. It is an essential component of many biochemical processes, including providing intermediates for energy production<sup>33</sup>.

#### VITAMIN D

This vitamin is responsible for calcium and phosphorus absorption, which are required for many physiological functions<sup>34</sup>. In a model of Vitamin D deficiency, supplementation induced the expression of antioxidant genes and genes involved in detoxification<sup>35</sup>. A meta-analysis revealed a role for Vitamin D in curtailing insulin resistance, a central component of diabetes<sup>36</sup>. In a double-blind trial, Vitamin D supplementation reduced the weight, waist circumference, and BMI of fifty overweight individuals<sup>37</sup>. Vitamin D can prevent sarcopenia (loss of muscle strength) and can improve muscular performance<sup>38</sup>. This is particularly important for older adults who are more likely to experience sarcopenia.

#### THIAMINE (VITAMIN B1)

Thiamine plays an important role in the immune system by promoting the maturation of T-cells, which is crucial for their functionality<sup>39</sup>. An essential nutrient of cellular metabolism, thiamine is involved in the breakdown of carbohydrates, protein, and fat<sup>40</sup>. It contributes to citrate production, which is required for energy production<sup>41</sup>. It is recognized for its antioxidant activity<sup>42</sup>, and obese people are commonly found to be deficient<sup>43</sup> suggesting a link between thiamine and metabolic health.



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### **RIBOFLAVIN (VITAMIN B2)**

This Vitamin plays a double role in immunomodulation. On one hand, it is required for the function of macrophages<sup>44</sup> and may also suppress inflammation through the downregulation of immune signaling complexes (inflammasomes)<sup>45</sup>. Like thiamine, riboflavin has antioxidant activity<sup>46</sup> and is required for energy production mediated by mitochondria<sup>47</sup>.

### **NIACIN (VITAMIN B3)**

Niacin also contributes to energy production by mitochondria<sup>47</sup>, but also plays a potential antiinflammatory role through multiple mechanisms<sup>48,49</sup>. In a rat model of high-fat diet-induced obesity, niacin supplementation during the high-fat diet led to a significant reduction in food intake, matched with a reduction in weight increase<sup>50</sup>. Furthermore, niacin diminished the negative effects of the diet on other factors such as exploratory behavior and brain protein peroxidation<sup>50</sup>.

### **VITAMIN B6**

This nutrient is essential for the functioning of the immune system. Depletion of Vitamin B6 leads to lower antibody levels, and it is involved in the development of T-cells and the production of interleukins<sup>51</sup>. It plays a protective role in diabetes by diminishing some of the disease's side-effects and also has antioxidant capabilities<sup>52</sup>. Vitamin B6 plays a broad role in cellular metabolic processes including amino acid and neurotransmitter biosynthesis<sup>53</sup>.

### **FOLATE (VITAMIN B9)**

Folate is essential for cellular proliferation by providing components of DNA<sup>54</sup>. Folate deficiency leads to reduced T-cell differentiation, reduced maturation of dendritic cells, and lower cytokine production<sup>55</sup>. Together with vitamin B12, folate plays an anti-inflammatory role during non-alcoholic steatohepatitis (NASH), where a build-up of fat causes liver damage. Folate may also play an important role in muscle growth<sup>56</sup>, making it an important component of any fitness plan.

### **VITAMIN B12**

Vitamin B12 plays a crucial role in both the proliferation and functioning of T-cells and natural killer cells, which are immune cells responsible for eliminating virus-infected cells<sup>57</sup>. This vitamin, along with its anti-inflammatory capabilities when combined with folate, is also essential for the production of red blood cells<sup>58</sup>.

### BIOTIN (VITAMIN B7)

This vitamin is essential for the development and functioning of various immune cells, such as natural killer cells and T-cells<sup>59</sup>.

### PANTOTHENIC ACID (VITAMIN B5)

Though not as extensively researched as other vitamins, pantothenic acid is potentially involved in maintaining barrier function and immune response in the intestinal system<sup>55</sup>.

### TOCOTRIENOLS COMPLEX POWDER (VITAMIN E)

Vitamin E is essential for numerous aspects of T-cell biology, including facilitating communication between T-cells and antigen-presenting cells. Additionally, Vitamin E is instrumental in regulating critical immune signaling molecules<sup>62</sup>, has antioxidant properties<sup>63</sup> and may positively affect metabolism<sup>64</sup> and aging<sup>65</sup>. Tocotrienols are Vitamin E family members with various essential physiological functions. In a rat model of high-fat diet-induced obesity, tocotrienols improved cardiovascular health, reduced inflammatory cell infiltration, and improved liver structure and function<sup>66</sup>.



## MINERALS

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### CALCIUM

Calcium signaling is a central component of cellular biology, mediating muscle contraction, signaling, and cell death mechanisms, among many others<sup>72</sup>. As such, lowered calcium levels, such as lack of dietary calcium, affect many crucial physiological processes. This includes pancreatic cell function in diabetes<sup>73,74</sup>, liver regeneration<sup>75</sup>, immune cell activation<sup>76</sup>, and weight management<sup>77</sup>.

### IODINE

Iodine is an important mineral with antioxidant properties<sup>78</sup> involved in many biological processes and conditions like metabolism<sup>79</sup>, immune cell function<sup>80</sup>, and insulin resistance<sup>81</sup>.

### MAGNESIUM

Magnesium is required for T-cell activation<sup>2</sup>, liver function<sup>83</sup>, and carbohydrate metabolism<sup>84</sup>. Lack of magnesium can speed the progression of diabetes<sup>85</sup>, and it is a crucial component in sports nutrition<sup>86</sup>.

### ZINC

Zinc plays a crucial role in the development and functioning of B-cells and T-cells. It is vital for the functioning of zinc finger proteins, which are key in mediating the immune response<sup>87,88</sup>. Like Niacin, Zinc reduced high-fat diet-induced obesity in rats and also reduced insulin resistance<sup>89</sup>, which is supported by other findings<sup>90,91</sup>.

### SELENIUM

Selenium is a trace element with antioxidant properties<sup>92</sup> and wide-reaching roles in the body<sup>93</sup>. In the immune system, it promotes T-cell activation and activity<sup>94</sup>, which has clinical importance in Chron's disease<sup>95</sup>.

### MANGANESE

Manganese controls the signaling of immune cells<sup>96</sup> and plays a host of other physiological roles<sup>97</sup>.

## CHROMIUM

Chromium is a trace element with many physiological roles, and deficiencies lead to disturbances in the metabolism of fats and carbohydrates<sup>98</sup>.

## MOLYBDENUM

Molybdenum is another trace element that is important for metabolism in immune cells<sup>99</sup>.

## AMINO ACIDS

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### L-GLUTAMINE

L-glutamine is an amino acid with various biological functions. As a proteinogenic amino acid, it is required for protein synthesis. It is also used as an energy source and a carbon donor for energy generation by mitochondria. L-glutamine plays a role in protecting the liver from injury, intestinal barrier maintenance<sup>100</sup>, preventing fatigue<sup>101</sup>, and is effective as a health supplement in older adults after infection<sup>102</sup>.

### GLYCINE

Glycine is another proteinogenic amino acid with a mildly sweet flavor and a vast array of biological functions<sup>103,104</sup>. It is a fundamental component of glutathione, a molecule which helps maintain oxidative balance in cells<sup>105</sup>. It is also required for the formation of bile acids which aid in the digestion of fats<sup>106</sup> and is a promising target for mental health therapies because of its role as an inhibitory neurotransmitter<sup>107</sup>.

### TAURINE

Taurine is a non-proteinogenic amino acid necessary for energy generation in different cell types, including muscle<sup>108</sup>. It has antioxidant properties<sup>109,110</sup> protects cells from oxidative stress<sup>111</sup>, plays a general role in mitochondria maintenance and function<sup>112</sup> and also contributes to bile acid production<sup>113</sup>.



## HERBAL EXTRACTS

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### LARIX LARICINA HEARTWOOD EXTRACT

This extract is a source of high-quality fiber and cellulose, which are important prebiotics for healthy gut microbes. It also has antioxidant properties, which may be important for dealing with symptoms of diabetes<sup>114,115</sup>.

### MATCHA GREEN TEA LEAF POWDER

Matcha tea has a wide array of reported therapeutic functions<sup>116</sup> including improving cognition and memory<sup>117</sup> and as a natural therapy for breast cancer<sup>118</sup>. Matcha also provides energy via its natural caffeine content.

### ELLAGIC ACID

Present in many fruits and vegetables, ellagic acid has antioxidant properties and has been shown to reduce insulin resistance in rats<sup>119,120</sup>. It can trigger death of cancer cells in vitro<sup>121</sup> and may be helpful with detoxification after lead poisoning<sup>122</sup> and treating liver conditions<sup>123</sup>.

### MILK THISTLE SEED EXTRACT

The primary therapeutic ingredient in milk thistle extract is silymarin, which has been the subject of robust scientific study<sup>124</sup>. The extract may prevent liver disease<sup>125,126</sup> and protect cells against the harmful effects of chemotherapy<sup>127</sup>.

### GINGER ROOT POWDER

Ginger, a long-standing traditional remedy, effectively alleviates heartburn, vomiting, and indigestion. It possesses antifungal capabilities, diminishes inflammation, and enhances the functionality of T-cells<sup>128</sup>. In a meta-analysis, it was found to improve weight loss in obese individuals<sup>129</sup>, and may help reduce symptoms of indigestion<sup>130</sup>.

## CHOLINE

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Choline is a nitrogen-based molecule which acts as a structural component of membranes<sup>124</sup> and as part of signaling molecules involved in immune responses<sup>125</sup>. Choline is a component of acetylcholine, a crucial neurotransmitter<sup>126</sup>, and choline plays a vital role in brain health<sup>127</sup>. It may also play a role in epigenetic control of liver function<sup>128</sup>.

## PROTEIN - ORGANIC BROWN RICE AND PEA

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CanXida ReCharge (Formula RCH) contains 14g of organic brown rice and pea protein per scoop. These protein sources are vegan-friendly and provide a more responsible way to support muscle growth and maintenance.

## SWEETENERS

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Rebaudioside A (Stevia), Luo Han Guo Fruit Extract, and Xylitol are naturally sourced sweeteners with no reported side effects<sup>131-133</sup>.

## OTHER INGREDIENTS

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### MEDIUM CHAIN TRIGLYCERIDES

As the name suggests, these are medium-length fatty acids containing 6-12 carbons in their polycarbonate chain. They are known for providing long-lasting energy, created immediately rather than being stored. It may also promote digestive health<sup>134</sup>.

### NATURAL VANILLA FLAVOUR

An all-natural flavor to improve taste and help adherence to dosage.

### XANTHAN GUM POWDER

This is a common ingredient in various products and has no adverse health effects

## OTHER BENEFITS

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CanXida ReCharge (Formula RCH) is sugar-, dairy-, GMO-, soy- and egg-free. It is suitable for vegans and vegetarians, is third-party tested, and contains no artificial flavors or colors.

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## CONCLUSION

In this whitepaper, we have examined the challenges posed by Candida infections and the potential of CanXida ReCharge (Formula RCH) in addressing these challenges\*. Candida, a versatile fungal pathogen, presents diverse symptoms due to its ability to adapt and affect various body systems. Therapy resistance in Candida species has emerged as a significant clinical challenge, and our effective therapeutic arsenal is becoming increasingly limited. Candida infection represents a significant health burden and lessens quality of life by negatively impacting gut health, mental well-being, and metabolic balance.

The unique composition of CanXida ReCharge (Formula RCH), containing vitamins, minerals, amino acids, and herbal extracts, is specifically designed to combat Candida overgrowth and support overall health\*. This formulation targets fungal growth\* and offers immune support, metabolic enhancement, and nutritional supplementation. CanXida ReCharge (Formula RCH) is a multifaceted dietary supplement offering a promising solution for those affected by Candida-related issues\*. Its comprehensive approach not only fights the fungus\* but also aids in restoring the body's metabolic balance. The backing of scientific literature adds to its credibility as a practical option for improving metabolism, cognition, gut health, mental health, and physical performance in addition to tackling Candida\*.

*\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.*



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