



# Nutritional Yeast & Liver

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Literature Education Series On Dietary Supplements

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With the enormous variety of sophisticated products currently available in the dietary supplement industry, you might take pause to consider where it all started. What were the very first dietary supplements? The answer is Brewers' Yeast or Nutritional Yeast, and Desiccated Liver.

## **Nutritional Yeast**

Nutritional yeast is rich in many basic nutrients such as the B vitamins, chromium, sixteen amino acids, fourteen or more minerals, and seventeen vitamins (not including vitamins A, C and E). Yeast is also high in phosphorus.<sup>1 2</sup> There are two primary sources from which nutritional yeast is grown: 1) Brewer's yeast is grown from hops (a by-product of brewing beer), and 2) Primary grown yeast is grown from whey, blackstrap molasses or wood pulp. Nutritional yeast should not be confused with live baker's yeast which can deplete the body of B vitamins and other nutrients.

Nutritional yeast is an excellent high protein/high energy food. In past years, brewers' yeast was used extensively by fitness enthusiasts in preparing a blended energy protein drink (often in combination with a protein powder, juice and/or fruit). Non-athletes also used nutritional yeast products as a natural "pick-me-up" for energy purposes. As a matter of fact, early

nutrition authors such as Linda Clark and Carlton Fredericks used to sing the praises of nutritional yeast for this purpose.<sup>3 4</sup> One author even recommended that brewer's yeast be mixed in with your dog's or cat's food to help prevent fleas<sup>5</sup> (As odd as this may sound, I've tried it with my dogs and it works!).

In addition to anecdotal reports of benefits from nutritional yeast, there have actually been a few published scientific reports as well. The first was associated with the Spanish Civil War. During the second winter of the war (1937-38) most of the patients showed a picture of classic pellagra (a vitamin B3 or niacin deficiency disease) as well as a number of neurological disorders. Although supplemental niacin effectively treated the pellagra, it did nothing for the neurological disorders. Improvement was noted, however, following the administration of brewer's yeast. It was concluded that the neurological manifestations were not due to a niacin deficiency, but to the deficiency of some component of the vitamin B complex which was found in the brewer's yeast.<sup>6</sup>

In a study conducted in Australia, children with phenylketonuria (an in-born metabolic error in converting the amino acid phenylalanine into tyrosine) were found to have low blood levels of the important antioxidant mineral selenium, as a result of the special phenylketonuric diet they had to follow. When the children were given a brewer's yeast supplement for six months that provided 50 mcg of selenium daily, their blood selenium levels significantly increased.<sup>7</sup>

In another study, elderly subjects, including eight mildly non-insulin-dependent diabetics, were fed either chromium-rich brewer's yeast. The results were that with both the diabetic and nondiabetic subjects, glucose tolerance improved

significantly and insulin output decreased after supplementation. Cholesterol and total lipids fell significantly after supplementation as well. An improvement in insulin sensitivity also occurred.<sup>8</sup>

### **Desiccated Liver**

Desiccated liver (from a bovine source) provides a rich, naturally occurring source of B vitamins and amino acids which athletes and other active individuals have often used to support improved performance. It also contains vitamin A, vitamin C, vitamin D, iron, calcium, phosphorus, and copper. In addition, some individuals have used desiccated liver to provide glandular support to their own livers.

The term “desiccated” essentially means dehydrated. Typically, this is done at a low temperature in order to remove moisture and retain nutrient value once it has been tableted. Desiccated liver supplements should also be defatted since it is the fat portion of the liver that tends to store toxins. Furthermore, the savvy consumer who wishes to use desiccated liver should look for a supplement derived from calves, since it is likely that far fewer toxins would be present compared to adult cattle that have had years to store more toxins.

So is desiccated liver’s historical use as an aid for enhancing energy deserved? Certainly desiccated liver is among the group of supplements that have been used by Olympic athletes since the 1950s to help them gain a competitive edge.<sup>9</sup> Also, consider that for decades, vitamin B12 shots have been administered by doctors to energize people. Many nutritionally-oriented physicians have also recommended desiccated liver to their patients since it B12 and iron, among a host of other nutrients essential to generating more energy and stamina.<sup>10</sup> Another author discussed experiments conducted by D.B. Ershoff, Ph.D. on laboratory animals. Reportedly, Dr. Ershoff supplemented the diets of the animals with desiccated liver, which increased their endurance by nearly 75%.<sup>11</sup> The answer to the energy question appears to be yes.

What about the use of desiccated liver by some individuals to provide glandular support to their own livers—is there a scientific basis for this? Maybe. In one “test tube” study, a liver extract from pigs was found to act synergistically with

growth factors to stimulate the growth of liver cells.<sup>12</sup>

Of course critics have stated that the use of a glandular substance would have no benefit since it would have to be completely digested down into individual amino acids before the body could absorb them, and once that happened the body would not recognize that those amino acids came from a glandular source. This is a common misconception, however. The fact is that 100% of all ingested food materials such as proteins, need to be broken down into their smallest molecular building blocks (amino acids), before they can be absorbed. Research has clearly shown that approximately five percent of the protein load delivered to the small intestine is not broken down into amino acids or polypeptides in the gut, but passes as intact protein molecules into the circulatory system.<sup>13</sup> Thus, the gut epithelium, earlier thought of as a route strictly for active absorption of nutrients and a barrier for other contents of the abdomen that are supposedly harmful, seems to have greater permeability. Proteins such as Immunoglobulin G (m.w. 20,000-50,000), ferritin, albumin, horse radish peroxidase, gliadin, trypsin and chymotrypsin all have the demonstrated ability to be absorbed from the gut of adult animals and maintain full function in the bloodstream.

Furthermore, consider that glandular concentrates (such as desiccated liver) may contain small polypeptide, protein-like substances which have specific messenger activity aimed at target tissues. For example, it is well known that the pituitary gland secretes small polypeptide messenger hormones like ACTH, vasopressin and oxytocin which in turn act directly on specific target tissues. The level of these hormones necessary to induce physiologic tissue-specific activity may be less than 100 nanograms per milligram of the tissue.<sup>14</sup> Of course all of this is not proof that desiccated liver definitively provides glandular support to human livers, but it does suggest that it may be possible.

Finally, one concern that many may have is a desiccated liver supplement may be a carrier of “mad cow disease.” However, both the supplement industry and the FDA reassures the public that because all byproducts from BSE-infected countries are banned, so contamination should not be a worry.<sup>15</sup>

## Conclusion

Nutritional yeast and desiccated liver supplements have an extensive history of anecdotal (and sometimes scientific) use in humans. If you're interested in trying either of these well-established dietary supplements, you may experience energy-enhancing benefits as a result.

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