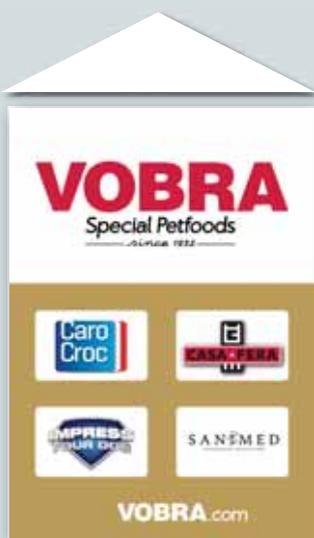




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Yeast in petfood

Many dog and cat foods declare a yeast ingredient, most commonly brewer's dried yeast, but also yeast extract, yeast cell walls, selenium yeast or yeast culture. Brewer's yeast is a by-product from the brewing of beer or ale. Extracts and cell walls are yeast parts. Selenium yeast is grown in nutrient mixtures enriched with the trace element. Yeast culture is yeast and its growth medium.

Until the 1950s, whole dried yeast served as source of B-vitamins in experimental dog foods with highly purified ingredients. By using that kind of foods, black-tongue disease in dogs was found to respond to consumption of brewer's yeast (1), which led to the identification of vitamin B3. Yeast is lauded as B-vitamin powerhouse, but is as such needless for current petfoods that are effectively and profitably supplemented with pure B vitamins. Similar reasoning holds for selenium yeast (2).

Brewer's yeast in petfood is rarely linked to health claims. Nutritional yeast supplements may promise flea control, healthy skin and coat, but do so without evidence. About 1% of brewer's yeast is often added to dry food for palatability, which requires securing for each application. MOS (mannan-oligosaccharides) from yeast cell walls is touted for gut and immune health, but dog studies are unsupportive (3). Purified yeast beta-glucans can stimulate immune responses, albeit without known impact on pets' health maintenance (4).

Yeasts constitute a wide variety of single-celled organisms. Many are safe and useful such as the species employed in baking and production of beverage and fuel alcohol. Moderate yeast amounts in petfood seem harmless to dogs and cats. Curiously, one petfood brand carries "no added yeast" as label claim (5). As specific yeast species can cause skin infections in dogs, anti-yeast foods are being proposed, but their efficacy is unsubstantiated.

Composition

Brewer's yeast (*Saccharomyces cerevisiae*) is derived from drying the slurry that remains after beer and ale fermentation. Due to different practices of breweries, the composition varies, but can be put at 41% protein, 3% fat, 0.5% crude fiber, 6% ash, 5% moisture and 44.5% nitrogen-free extract (6). Dried, whole yeast contains about 10% of both mannan-oligosaccharides (3) and beta-(1,3)/(1,6)-glucans (4).

Digestibility

Dogs received an extruded reference diet as such or with brewer's yeast in 85:15 mixing ratio (7). Apparent total tract digestibilities of crude protein for the reference and yeast-containing diet were 84.7 and 86.2% of intake (n=7/diet). With the difference method, the digestibility of protein in brewer's yeast was calculated to be 88.8%. Two forms of sugarcane yeast had protein digestibilities of 63.0 and 74.7% (7). Protein digestibility for other types of yeast extracts was 72.4% in dogs (8) and 78.6% in cats (9).

Beagles, aged 5-9 months, were dosed daily with a gelatin capsule holding spherules of live *S. cerevisiae* CNCM I-4407, equaling about 4.4% of the dry, high-fiber food offered (10). Yeast versus placebo capsules produced a 2.8-fold increase in fecal yeast counts, while leaving apparent protein and fat digestibilities unchanged.

Protein source

Mean apparent protein digestibility for the five yeast preparations (7-9) was 75.5%, which is comparable to 78% as reported for poultry by-product meal (11). For dogs and cats, the limiting amino acid in brewer's and concentrated yeast is methionine plus cystine (cf. 7, 12, 13).

In dogs, feeding dry food containing 30% of a yeast preparation caused voluminous,



watery stools (7, 8). Poor fecal consistency was not reported for cats fed wet food mixed with 30% (on a dry matter basis) concentrated yeast (9). Dogs and cats fed dry food containing 7.5 or 10% of a dried yeast had good stool quality (7, 14, 15).

Yeast preparations contain 1 to 3% total purines (16). Feeding dry food with 10% yeast to Dalmatian dogs may induce a two-fold rise in renal urate excretion (17), thereby increasing the risk of urate urolithiasis.

Palatability

In two-pan tests, individual animals have simultaneous access to an excess quantity of two foods for a limited period (18). Food consumed from each pan is measured. Preference can be quantified as intake ratio for test and reference food. By comparison, in the home setting, pet's liking and owner's acceptance of a single, unfamiliar product are crucial for repeat purchase.

Bolstered by preference data in promotional materials, yeast is often included in petfood for flavor enhancement. Brewer's yeast in petfood was preferred over corn wet milling yeast from industrial ethanol production (6, 19). Technically, the former could be effectless while the latter depressed palatability.

Palatability research in dogs (7, 8, 14, 20) showed that in five out of 7 tests replacement of diet ingredients by a yeast preparation produced an intake ratio ≥ 2 , which was the case in one out of four cat tests (9, 15, 21, 22). Adding yeast to petfood does not always appreciably enhance palatability.

Yeast and flea control

Dogs fed dry food were infested weekly with cat fleas (23). For five weeks, they daily received some canned food without or with 14 g active or inactive brewer's yeast, matching 5.6% in dry food. Yeast did not affect weekly flea counts.

Anti-yeast food

A starch-restricted diet is thought to cut off glucose supply of pathogenic yeasts, thereby mitigating canine skin and ear infections with yeast (24-28). The theory is flawed and effectiveness is unproven.

** Dr Anton C Beynen writes this exclusive column on dog and cat nutrition every month. He is affiliated with Vobra Special Petfoods.*