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Wet food and calorie intake by cats

Many pet cats have 24-hour access to dry food or various combinations of dry and wet food. This free-choice feeding may contribute to overweight development (1). About 35% of the cats seen by US veterinarians is overweight (2). Some vets recommend providing wet food rather than dry kibble (3-5). Wet food is low in calories due to its bulk water, which is additionally thought to fill the stomach, thereby inhibiting further eating.

Water has zero calories. Canned or pouched cat food typically contains 80% moisture, whereas in kibbled dry food there only is about 10%.The impact of dietary water on voluntary calorie intake has been studied. Water was added to dry food or was removed from wet food (by freeze-drying). Free-fed laboratory cats consumed somewhat less calories in response to water dilution of dry food. Wet food elicited noticeably lower caloric intakes than its dewatered, dry form.

When cats are switched from commercial dry kibbles to a wet product, an increase in dietary water is achieved. According to feeding tests lasting up to 14 days, such a diet change lowers caloric intake by around 15% in cats with unlimited access to food. However, the effect size for individual cats can vary considerably. Moreover, a changeover to a wet diet high in fat (more than 10% crude fat in the food as fed) may raise, rather than diminish caloric intake.

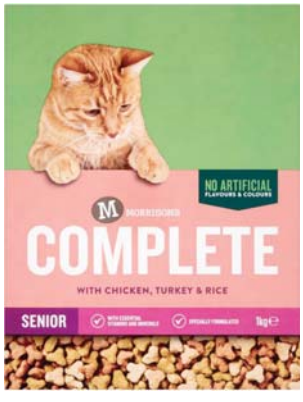
Continuous availability of moist food implies that it loses freshness by drying out while sitting in the bowl, which is associated with deteriorating hygiene. Furthermore, it is unknown whether feeding cats unrestricted quantities of wet food will in time induce a lower, stable body weight. Wet food is not an established protective factor for feline obesity. Portion controlled feeding of dry and/or wet food, with cat's body condition as compass, is still prudent.

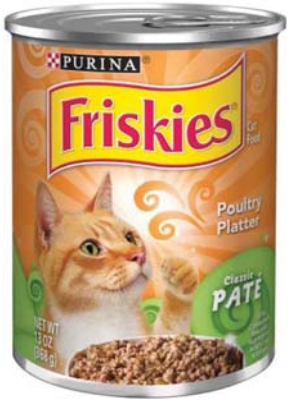
Food type and obesity

In westernized countries, 27% of the pet cats receives commercial dry food as the sole source of nourishment; 6% is on wet food only and 58% eats a combination of dry and wet food (6-9). About 50% of all cats is fed ad libitum (6-8). No association between food type and overweight has been found (1, 10, 11).

Water dilution of dry food

Diluting dry food with water leaves macronutrient composition and energy content of the dietary dry matter unchanged, but it affects texture and aroma. Cats were allowed unlimited access to a dry semipurified (12) or commercial (13, 14) diet without or with added water. The water-diluted diets slightly reduced dry matter intake (DMI), or energy consumption. The percentage values for dietary water/change of DMI were 75/-9 (12), 75/-2 (13) and 50/-7 (14).





Cats were offered a commercial dry food without or with additional water in two 45-minutes feeding periods per day. After a phase of 20% caloric restriction, excess food was supplied in the two meals. The descriptors of treatment and outcome were 40/+8 and 40/-10 for the first and second experiment (15). In another time-limited feeding study (16), excess food came after individually-allocated amounts to maintain body weight: the descriptors were 40/-26 and 80/-29. Hydration of dry food did not affect DMI in cats fed amount -limited meals (17, 18).

Water removal from wet food

In a cross-over trial (19) with periods of 3 weeks, 10 cats had access, for most of the day, to a canned food (80% moisture) or the same food with the water removed by freeze-drying (10% moisture). Both diets were enhanced with 10% beef-flavored stock (10% moisture). The high-moisture versus dehydrated diet reduced DMI by 26%. In a 4-hour, two-bowl test, the high-moisture diet was preferred over dehydrated product (19). DMI was unchanged when a canned diet or its freeze-dried form was supplied in two energy-restricted meals daily (18).

Commercial wet versus dry food

Six studies (14, 20-24) have compared DMI for commercial wet foods and dry foods under ad libitum feeding conditions. On the dry and wet diets, the cats consumed 67 and 47 g dry matter/day; the overall mean energy intake fell from 980 to 896 kJ metabolizable energy/day. In one study (24), energy intake was increased when the wet food was administered for 25 days. This food was energy-rich as it contained 49% fat in the dietary dry matter, whereas the other commercial wet foods tested contained 14 to 34%.

Water as diluent

The picture emerging is that cats fed liberal amounts of high- versus low-moisture foods consume more mass of food as is, but less dietary dry matter and energy. Apparently, cats do not or cannot fully compensate for dietary energy dilution. In meal-fed cats, stomach fill may constrain food intake. Such action is unlikely for cats fed ad libitum, but they also ingested less energy when commercial dry food was replaced by wet food in studies lasting up to 14 days. It remains unexplored whether those cats reach a new steady state with lower body weight and lower energy intake.

Cellulose as diluent

Cellulose fiber provides zero calories to cats; it is indigestible and non-fermentable (25). High-moisture and high-cellulose diets affect DMI differently. When allowed free access to a cellulose-rich dry or wet diet, cats maintain DMI, thereby self-restricting caloric consumption (25).

List of references is available on request from the author (beynen@freeler.nl)

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