DBN Review Nº 13
A resource about dairy-based nutrition
A product of the Consumer Education Project of Milk SA
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This review introduces the traditional fermented milk product *amasi* and describes its nutritional value in the South African consumer's diet.

A publication for health professionals

Dairy products: *Amasi*

Changing attitudes, norms and perceptions

Dietitians throughout South Africa voiced their opinion on various dairy products in a study in 2015.[1] The research showed that dietitians not only consume milk, yoghurt and cheese regularly, but also associate the intake of these products with beneficial health effects. As shown in Figure 1, the respondents perceived these dairy products as nutrient dense and recognised their positive association with bone health, growth, weight loss and reduced risk of cardiovascular disease. However, the respondents were not as familiar with the taste and health benefits of *maas*, a commonly used fermented milk product in South Africa.

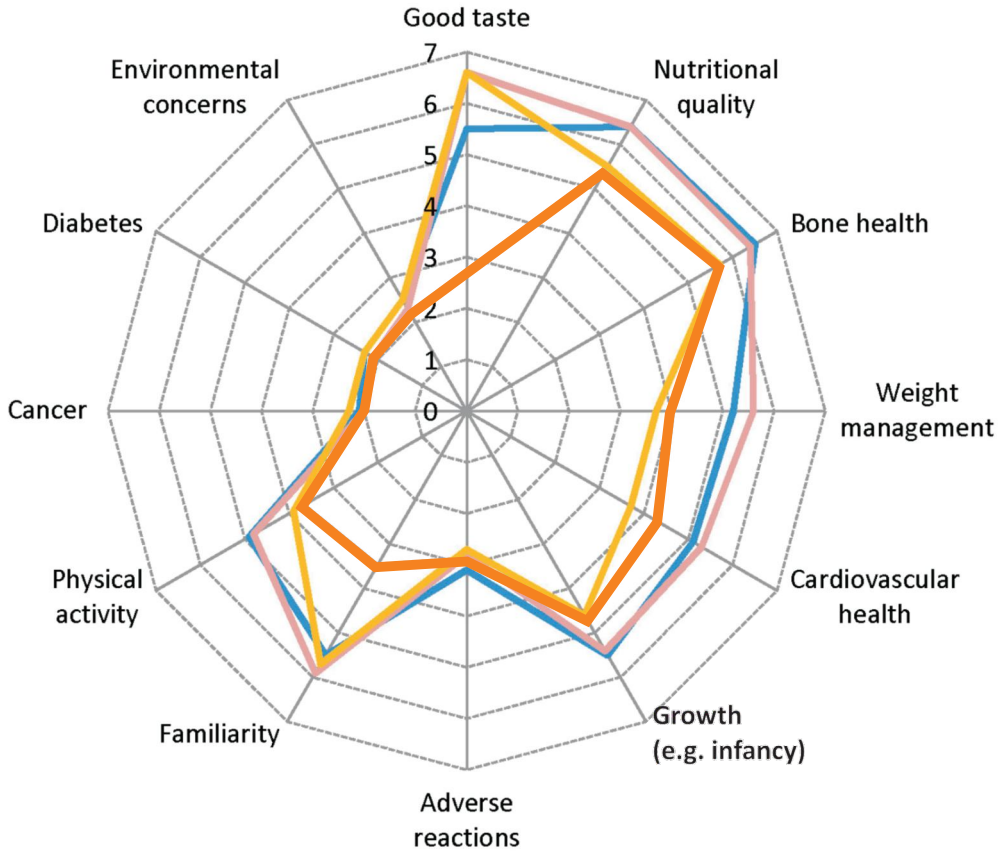

Figure 1
Summary of dietitians' perception of attributes of various dairy products, as found in a consumer study[1]
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What is *maas?*

Maas, commonly known as *amasi* in South Africa, is a fermented milk product and is described as a liquid-like beverage similar to yoghurt or buttermilk. It has a creamy white colour, a smooth texture and a distinct sour taste.[2]

Fermentation has been used since ancient times to preserve foods such as dairy, cereals and vegetables. The preservation effect of fermentation, originally discovered accidently, still forms the basis of commercial *maas* production. Today, *maas* is produced by fermenting pasteurised full-cream cow's milk through the activity of naturally present or added live bacterial cultures.[2,3]

Amasi is a historically important product in many South African cultures and is still commonly produced in the traditional way by cattle-owning families in rural areas. The first scientific record of the traditional production of *maas* was

recorded in 1939.[3] According to the description, the traditional method involved storing cow's milk in a calabash, clay pot or hide sack. The sealed container was then placed indoors near a source of gentle heat (±20 °C). Fermentation progressed over three to five days, and was accelerated by the presence of natural bacteria in the milk, residual bacteria on the inside of the container or by adding some *amasi* from a previous batch. As the milk separated, the liquid (whey) was removed at regular intervals, with the remaining thicker white coagulant being harvested when it achieved the desired qualities.[4]

Modern commercial methods for producing *amasi* involve fermenting pasteurised milk under controlled processing conditions by adding a permitted starter culture to the milk.[2] These starter cultures are generally mesophilic and typically include *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *cremoris,* and *Leuconostoc mesenteroides* subsp. *cremoris*.[3]

The nutrient composition of *maas*

Fermentation is an established method to improve the nutritional quality of food products such as dairy. *Amasi* is nutrient dense and regarded as a good source of high-quality animal protein, along with the other important micronutrients found in dairy. *Amasi* naturally contains less lactose than fresh full-cream milk.

Table 1

The nutritional composition of *maas*[5]

Nutrients per 100 g	*Maas*
Energy	269 kJ
Protein	3.30 g
Total carbohydrate Lactose	4.61 g 3.68 g
Total fat Saturated fat Monounsaturated fat Polyunsaturated fat	3.66 g 2.35 g 1.09 g 0.08 g
Calcium	162 mg
Phosphorus	92.20 mg
Magnesium	14.30 mg
Potassium	190 mg
Sodium	56.70 mg
Vitamin A	37.50 µg
Vitamin B_{12}	0.40 µg
Vitamin B_2	0.15 mg

Health benefits of *maas*

Organic acids (predominantly lactic acid) produced during the fermentation process lower the pH of the milk (pH 4.29). This causes coagulation and inhibits the growth of many of the common spoilage microorganisms that lead to deterioration.[4] Fermented milk therefore has a longer shelf life than fresh milk and can be stored for up to 21 days at 4 °C.[2,6] The low pH of *amasi* can help to delay gastric emptying, with beneficial effects on the glycaemic response, appetite control and satiety.[3,6]

Amasi is an ideal vehicle for the delivery of probiotics. Incorporation of probiotics in fermented milks has beneficial health effects, such as improving lipid profiles. The high potassium and relatively low sodium content of *maas*, which result in a low sodium-to-potassium ratio, is an important attribute considering emerging evidence that this ratio may be important for the prevention of hypertension and cardiovascular disease. The World Health Organization recommends an increased potassium intake from food and a lower sodium intake to reduce blood pressure, cardiovascular disease, stroke and coronary heart disease, and improve bone density.[6]

As in other fermented dairy products, the lactose content of *amasi* is lower than that of fresh milk. This is due to the conversion of lactose by lactic acid bacteria. *Amasi* is therefore generally well tolerated by people who are lactose intolerant.

For better health,

make **amasi** *part of your three servings of dairy every day.*

Maas in the typical South African diet

During the revision of the South African food-based dietary guidelines in 2013, a guideline focusing specifically on dairy products was included. This guideline states that consumers should 'have milk, *maas* or yoghurt every day', and was included to address the consistent reports of low calcium and potassium intakes and the high prevalence of hypertension and non-communicable diseases among the South African population.[6] The inclusion of *maas* in the dairy guideline is a recognition of *amasi* being a traditionally popular food that is widely consumed by many South Africans.[3]

Consumer data from the 2014 Target Group Index (TGI) indicated that two-thirds (67%) of South African households consumed *maas*, with the majority of consumers (82.4%) being black South Africans. According to the TGI, consumers are generally between 35 and 49 years of age and come from the lower socioeconomic groups (Living Standards Measure 1–5). Almost 50% of households in the study consumed *amasi* with maize meal porridge and indicated that it is a suitable product for the whole family. According to the study, 10.3% of households consume *maas* at least once a day, with 13.8% indicating that they consume *maas* at least once a week.[3] Including *amasi* in the diet contributes to the regular consumption of complete proteins, especially in households where lysine-deficient foods (such as brown bread or maize meal porridge) are consumed as staple foods.[5]

It is easy to make *amasi* part of your daily diet:

- Enjoy it as an anytime drink, on its own or with some raw honey added to sweeten it if you like.
- Serve it with fruit, as you would use yoghurt or kefir.
- *Amasi* with some bread can serve as a meal.
- Pour it over maize meal porridge (*pap*).
- Use it as a substitute for buttermilk or yoghurt when baking rusks or muffins.
- Add it to soups, pasta, smoothies, dips and sauces for a creamy taste.
- *Amasi* is an effective recovery drink after sport.
- Make sure you always have *amasi* on hand: you can freeze commercially produced *amasi* for up to three months. Just shake it well after defrosting.

References

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