

## 'Change in food habits in Asian consumers will be driven by animal welfare, climate change concerns'

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**Meatless meat is gaining popularity. This growing trend of meat-free alternatives is not just limited to restaurants and grocery stores. Colleges and universities across the globe are adding more meatless choices to their menus. Associate Professor Susanna Leong, Assistant Provost (Applied Research), Singapore Institute of Technology and Assistant Professor Verena Tan, Programme Leader, Dietetics and Nutrition, Singapore Institute of Technology, reveal more about this new trend**



### **How big is the meatless meat industry globally and how has it evolved over the years?**

The appetite for meatless meat is growing across the globe. The global meat substitutes sector is worth about \$21 billion and is set to grow to about \$23 billion by 2024, according to market research company Euromonitor.

While demand for meatless meat is expected to rise, the industry still has hurdles to overcome.

### **Asians are meat lovers, so how can this new technique bring in a change in food habits?**

While the growth of meatless meats is often highlighted as coming from the US and Europe, in recent years, Asia has seen a surge in the growth of meat alternatives. Several Asian countries, including Indonesia, the Philippines and Thailand are among the top 10 countries with the biggest vegetarian population increase.

Ultimately, change in food habits in Asian consumers will be driven by animal welfare and/or climate change concerns, food security and most importantly, the COVID-19 pandemic, which has increased consumer awareness of nutrition, health awareness and food safety.

**What will be the health benefits of this new concept of meatless meat? What about the protein deficiency attached to this concept?**

Meatless meat, or meat analogue, is a term for meat-like food made from vegetarian ingredients. They are also commonly termed plant-based meat, meat substitute, mock meat, imitation meat or vegetarian meat. Meat analogues are increasingly popular among people who are looking for healthy, low environmental impact, ethical food products. Food technology has enabled the production of meat analogues that are texturally like muscle meat from animal proteins, with appearance and eating sensation similar to cooked meat. Besides soy proteins, which are the most used plant protein, food manufacturers have used novel ingredients like jackfruit, rice, pea, shitake mushrooms.

Nutritionally, plant-based proteins (except for soy) have insufficient essential amino acids. This may mean needing to consume more plant-based meats to derive the same health benefits for muscle health as consuming meat from animal sources. Furthermore, to achieve the desired taste, texture, or mouthfeel, or to help mask some of the undesirable traits associated with plant proteins, some meat analogue products add salts, fats or sugar to compensate.

While they may be meat-free and considered 'healthier' by some, many of the meat analogues are nevertheless ultra-processed foods, which needs to be taken in moderation, balanced with natural foods such as fruits and vegetables in the diet.

### **How is vegetarian meat made? Which kind of vegetables are sourced for this?**

Vegetarian meat is currently being made with a wide variety of plant ingredients, with pulses and legumes (soy, peas, beans, mungbeans) being the main feedstock. Mushrooms and wheat gluten are also frequently used. Plant oils are also occasionally used to increase moisture or flavour.

### **Which other food tech innovations are taking place at SIT?**

Some of the food technology innovations taking place at the Singapore Institute of Technology (SIT) include:

1. Production of tuneable meat textures using high moisture extrusion. This offers a great potential to produce a wide range of meat analogue products from various protein sources, such as wheat, gluten, soy, pea proteins and more.
2. Fermentation of single-cell proteins using GRAS microbial strains to produce novel food ingredients that can improve texture and taste of plant-based meat.
3. Co-development of several variants of plant-based cheeses with leading integrated agricultural commodity and food solutions providers Agropcorp International. One of which is now sold under their HerbYvore brand in NTUC Fairprice Finest.

SIT will also be launching FoodPlant, Singapore's first shared facility for small-batch food production, offering various food technology platforms to enable local food players to innovate new food products for market validation. The facility is anticipated to be ready in the first quarter of 2022, set up in partnership with Enterprise Singapore and JTC.

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