

Couscous as the Teaching and Learning Aid for Nutraceutical Course

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ABSTRACT

This presentation describes couscous and its ingredients. It also serves as a concept paper recommending the cereal as teaching and learning material for the nutraceutical course, offered to pharmacy undergraduates.

Keywords: course, couscous, nutraceutical, pharmacy

INTRODUCTION

Couscous (Malay: Kuskus; Arab: كسكس, Figure 1), is a traditional cereal product, usually made using wheat flour, semolina or suji flour. However, it can be obtained from various types of flour, including gluten-free flour. For example, gluten-free couscous is produced by replacing rice flour with various legume flours, such as chickpea (Boudouira *et al.* 2023). Meanwhile, the combination of quinoa and dried fruit powders yielded a practical, nutritious, and gluten-free couscous, suitable for health-conscious consumers (El-Gohery *et al.* 2026). This cereal has the capacity to absorb water; the grain can expand and then stick to each other. It also has a disintegration rate; nevertheless, this does not make it easy to break down. It appears light, and offers a quality dish, texture and generally, it can appeal to the senses.

Couscous is a staple food in Algeria and North Africa, and is considered a healthy lifestyle (Oriente *et al.*, 2020; Djellouli *et al.*, 2023). Typically, couscous recipes include meat, vegetables, and beans. The ingredients can be prepared in a variety of ways, most of which contain a type of protein (such as beef, chicken, hard-boiled eggs, or fish), vegetables (onions, cucumbers, celery, tomatoes, carrots, bell peppers, or capsicum), and legumes (peanuts, fava beans, or broad beans, etc.). Various types of oils can be added when preparing couscous, such as olive oil. A squeeze of lemon juice and small pieces of lemon can be used as a flavor enhancer, in addition to a little salt and a sprinkle of pepper powder. Sliced olives, raisins, dates, figs, and dried berries can also be included as a garnish. A serving of couscous will appear more orange in color, when thinly sliced carrots are mixed in as a garnish (Figure 1, left).



Figure 1: Couscous can be varied, depending on the type and color of vegetables.

On the other hand, a couscous serving with boiled or steamed corn and chickpeas could appear yellowish brown (Figure 1, right). A sprinkling of edamame beans, vegetables and aromatic herbs such as mint leaves, coriander leaves and parsley leaves will make the couscous dish greenish (Figure 2).



Figure 2: Greener serving of the couscous appears similar to the local nasi ulam and nasi kerabu.

LITERATURE REVIEW

The Content of Couscous

Couscous has an excellent nutritional value due to its ingredients (Çelik *et al.* 2004; Cankurtaran *et al.* 2021). It has been proven to be a source of fiber. Vitamins A and B can be obtained from couscous, too. Meaty couscous recipes are also a source of vitamin D. There are various ways to prepare couscous dishes, most of which use beef, rather than seafood. Many studies offer ideas for evaluating the nutritional content of couscous recipes (Djellouli *et al.*, 2023). The combination of pea flour with 3% turmeric powder in couscous resulted with superior nutritional and functional properties (Kömürcü, 2026). Meanwhile, quinoa can be a new raw material, alternative to bulgur (Yuksel *et al.* 2017) in couscous production with its quality chemical characteristics. In terms of flour combinations, 50% wheat flour: 50% quinoa flour mixtures are suitable in terms of preserving structural properties (Demir *et al.* 2023). El Hazzam *et al.* (2026) demonstrated that quinoa-based couscous provides a nutritionally superior, gluten-free alternative to conventional wheat couscous, with processing conditions that preserve the raw material's nutritional attributes.

The safety and suitability of Moroccan couscous for human consumption was evaluated. It was found that the samples exhibited lead (Pb) and cadmium (Cd) contents that were below the maximum residue limit (Hammani *et al.* 2025). The other content of couscous also includes fat, or lipids. This lipid content depends on the amount of oil used in preparing couscous. It also depends on the fat in the beef slices, which are ingredients in this couscous dish. The lipid profile shows that most of the fat is polyunsaturated fatty acids, compared to the content of monounsaturated fatty acids and saturated fatty acids. Low saturated fatty acids are the main contributors to atherogenicity and thrombogenicity.

The polyunsaturated fatty acids, especially omega-6 (ω -6) and omega-3 (ω -3), are very important in health care functions. The cholesterol level in couscous is also low. The fat added to this couscous dish depends on the consumption of the local community, according to a particular dish. Lipid analysis studies can determine the fatty acid composition of couscous. The presence of saturated fatty acids has a negative impact on health, as factors related to cardiovascular disease and atherosclerosis.

DISCUSSION

Couscous Ingredients for Nutraceutical Teaching and Learning

The couscous, being carbohydrate-rich, is oftentimes, forbidden to persons with diabetes. Its social and cultural connotations, however, do not allow absolute avoidance of this dish in real life. Kapoor *et al.* (2024) briefly explores various ways of preparing, serving and eating couscous, in a glucofriendly manner. The authors

summarize available literature and suggest culinary tips to reduce glycaemic index and glycaemic load of this foodstuff. The couscous ingredient is seen to be closely related to the teaching plan for the core nutraceutical course for health students, such as pharmacy (Ramli *et al.* 2024; MOOC UiTM, 2026, Table 1). The pharmacy field is not only focused on research studies and the ability to create chemical content in medicines. In fact, it is also based on knowledge in the field of nutraceuticals. It refers to products that have health benefits, in addition to basic nutritional value, in food sources.

Table 1 The brief description of the nutraceutical course.

[Source: Massive Open Online Course (MOOC), UiTM, 2026].

Item	Brief content
1	Introduction of nutraceutical: definition and history of the use of nutraceutical
2	The source, manufacture and analysis of major nutraceutical, plus the raw materials.
3	Metabolism, bioavailability and pharmacokinetics of nutraceuticals.
4	Nutraceutical and the guidelines on its consumption for disease prevention
5	Introduction of cosmeceutical: definition and history of the use of cosmeceutical products.
6	The source, manufacture and analysis of major cosmeceutical, plus the raw materials.
7	Skin care products: the basic formulation for skin care preparation.
8	Hair care products: the basic formulation hair skin care products.
9	Dental products and their basic formulations: toothpastes, mouthwash, dentures cleansing preparations.
10	Color cosmetic and make up product
11	Soap: The making of solid and liquid soaps
12	The quality principles of cosmeceutical & nutraceutical products
13	The stability, safety and efficacy evaluation of nutraceutical and cosmetical products
14	The packaging and labelling technology
15	Overview & update of control of nutraceutical and cosmeceutical products in Malaysia
16	International and local marketing strategies, plus the consumer issues

The examples of nutraceuticals include ginseng herbs, green tea leaves, glucosamine, omega-3, folic acid, fish oil, and so on. Most nutraceuticals have various properties that can heal the body. This is where the combination of pharmaceutical chemistry and nutraceuticals and nutritional science comes into play, which should be conveyed to today's younger generation. With this important fact, Al-Worafi (2026) explored the vital role of pharmacists in guiding patients on the safe and effective use of over the counter (OTC) medications and nutraceuticals.

At the Faculty of Pharmacy, UiTM, the couscous (Figure 1 & 2) were prepared by the lecturers, as a teaching aid for PH240 Bachelor of Pharmacy (Honours) program. This activity could be planned after the students received the knowledge and information on the sources of major nutraceutical ingredients, plus the raw, natural materials (Table 1). The process for making couscous was fast (The Happy Foodie, 2026). The staff did not cook the couscous on any stove; instead, they put the couscous into a bowl and stir in the salt. Then, they pour in the boiling water until it reached about 1 cm above the couscous. Oftentimes, the staff used a 1:1 ratio of dry couscous to boiling water. The couscous was covered and set aside. It was let to steam off the heat for about 5 minutes, so that the couscous can soak up the hot water. Then, the staff fluffed the grain with a fork, after adding some unsalted butter (The Happy Foodie, 2026) or olive oil (Selebriti Malaysia, 2022) and mixed with the vegetables.

The dish were brought to the lecture hall for the Semester 4/Year 2 students. They were invited to participate in a quiz at the end of the PHC560 Nutraceuticals course. They were also asked to guess the contents of the dish. On average, students are tasting couscous for the first time, and some of them do not recognize this grain. It is anticipated that the students could have fun in their learning activities of this course. Other pseudocereals, for example the amaranth, quinoa and buckwheat, could also be introduced to the students. This is owing to their

great potential to be developed as food products with good nutritional composition and different functional properties (Schoenlechner, 2016).

CONCLUSION

A dish of couscous offers good macro and micronutrients. The quantity and quality of fat in couscous is contributed by the vegetable oil and animal fat used in the preparation process. It is well known that there are various methods for preparing couscous. Research in the field of nutritional science and nutraceuticals should study various versions of couscous cooking. For example, couscous for local people is not the same as couscous in Africa because of cultural differences, spices and the use of herbs are also different. Experimental parameters such as glycemic index (Bendaoud *et al.* 2026; Smaoui *et al.* 2026) and load should also be considered. Hopefully, local communities can benefit from consuming couscous which can lead to excellent intestinal health.

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