

# Collagen peptide fortified biscuits: Recent addition to geriatric diet

Anuj Kumar, Binsi P.K. and Zynudheen A.A.

ICAR-Central Institute of Fisheries Technology, Cochin

Importance of functional foods, nutraceuticals and other health products has been well recognized in connection with health promotion, disease risk reduction and decrease in health care costs. Collagen peptide may be considered as a functional ingredient for its health beneficial effects. Collagen peptides are hydrolyzed forms of collagen i.e. short chains of amino acids. Collagen is one of the most abundant animal proteins. It is fibrous in nature and forms the basis of mechanical/ structural support in living tissues. The collagen peptides are water soluble and their bioavailability is relatively higher than native collagen. Collagen peptide consumption increases the bone mineral density and supports healthy joints. The peptide also provides better inflammatory response against inflammation arising from training and exercise (<http://www.vitalproteins.com/collagen-peptides.html>). Elderly/aged people suffer from various age-associated degenerative diseases particularly, bone-linked problems. Ageing is associated with inflammation and higher risk of osteoporosis due to changes in bone density (Culross, 2008). Age-related bone loss can be effectively prevented by the dietary supplementation of collagen peptide.

Biscuits are consumed world-wide, mostly due to their pleasant taste and flavor, ready to eat nature, accessible cost, availability and longer shelf time (Sudha *et. al.*, 2007). The development of new functional ingredients has the advantage that food manufacturers can add extra value to products with which consumers are already familiar. Biscuits represents a potential choice for the addition of collagen peptide. Daily intake of about 10g collagen peptide is deemed to be helpful in increasing the bone mass density. With this aim, collagen peptide (@ 10%) was

incorporated into biscuits and effect of baking on various time-temperature combinations were studied.

With increasing baking time/ temperature, concomitant increase in darkness was observed (Fig. 1). The biscuits became much darker in appearance after being baked for elevated baking time or temperature. The browning reactions i.e. Maillard and others, occurring in the biscuit matrix probably caused the darkening (intense browning) of biscuits. As depicted in Figure 2, the sensory colour score was highest for biscuits baked at 180 °C for 9 min. and lowest for the ones baked at 200 °C for 9 min. on 9-point Hedonic scale. Sensory flavor scores for all treatment combinations varied minorly i.e. 7 to 8. The biscuits were liked 'moderately' to 'very much' on Hedonic rating by the sensory panelists. This

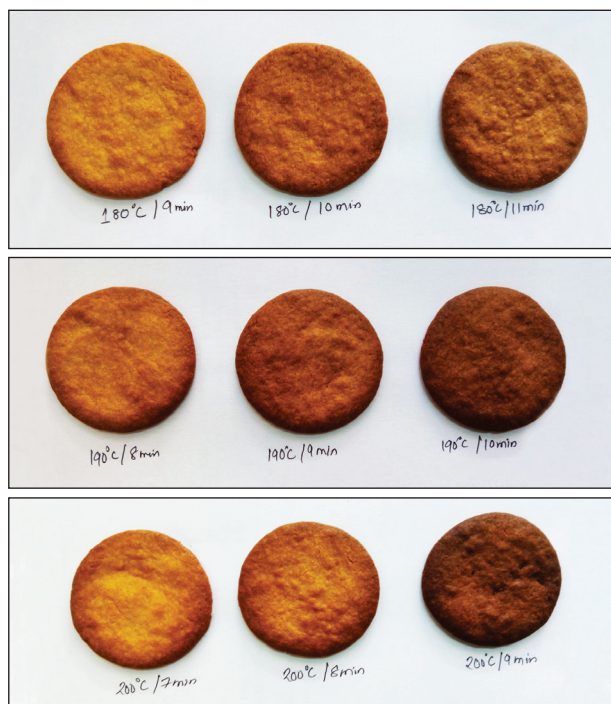


Fig. 1. Biscuits baked at various time-temperature combinations

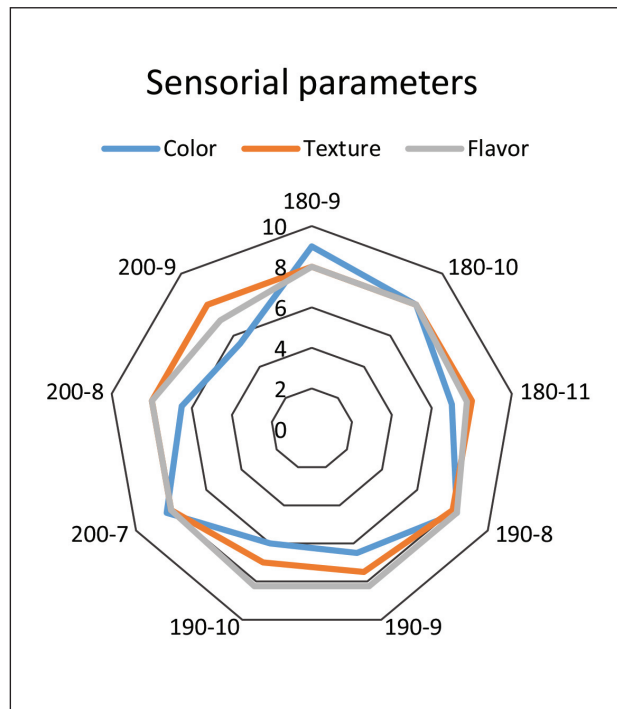


Fig. 2. Sensory characteristics of biscuit baked at various time-temperature combinations

depicts that addition did not cause development of any off-flavor components in the biscuits and likeability of biscuits remained almost similar for

all treatment combinations. Similar sensory scores were also obtained for 'texture' attributes of biscuits. The time-temperature combinations tested in the range given brought out meagre sensorially discernable changes in texture of biscuits.

The study suggests that collagen peptide could be effectively incorporated in biscuits wherein biscuits act as an ideal delivery vehicle through which collagen peptide can be orally ingested. The biscuits may exert preventive effect on age-linked bone disorders and could play an important role in geriatric nutrition.

### References

<http://www.vitalproteins.com/collagen-peptides.html>

Culross, B. (2008) - Nutrition: Meeting the needs of the elderly. Gerontology Update, ARN Network, p.7.

Sudha, M.L., Vetrmani, R. and Leelavathi, K. (2007) - Influence of fibre from different cereals on the rheological characteristics of wheat flour dough and on biscuit quality. *Food Chem.*, **100(4)**: 1365-1370.