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In recent years Asian noodles have gained popularity worldwide. Noodles are one of the many convenience foods prepared through extrusion process and have been considered to symbolize “long life” and “good luck” in Asian culture (Sowbhagya and Ali, 2001). Macaroni products, alimentary pastas and pasta are the most important extruded products and are more or less synonymous, but differ in their origin, raw material and method of manufacture. Pasta usually refers to “Italian style” extruded products such as spaghetti and macaroni. These are made from durum wheat semolina, which is very hard and vitreous. Noodles are usually made from soft wheat flour by a process of sheeting and cutting or by a process of extrusion using a die with round holes of desired diameter to get strands followed by cutting.

It is the versatility of form, composition and ease of preparation at consumer end which has made these products so widely accepted the world over. The popularity of pasta can be attributed to its sensory appeal, versatility, low cost, ease of preparation, nutritional content and excellent storage stability as well as increased consumer interest in ethnic foods in the Western world (Cole, 1991). The inherent blandness of the product makes them congenial with many kinds of adjuncts such as sauces, toppings, flavourings, etc., enabling vermicelli noodles to be used as the basis of different dishes with infinite variations.

There are numerous types of noodles available in the form of fresh, frozen or dried, that depend on the raw materials, product shapes, processing methods and the way of preparation, they may be fried, mixed with soups or
used as sweet or spicy dish and served. However, they have also undergone changes driven by technical innovations and consumer demands. Actual process for manufacturing a particular type of noodles may differ from country to country; the basic principles involved are practically the same. Although noodles are traditional foods, the technical and technological innovations are continuously evolving to adapt them to global consumers of all ages.

Wheat is the principal cereal grain which is extensively used for the production of noodles. However, the grain is not considered safe for the people suffering from celiac disease because of its major constituent protein gluten. Therefore, the celiacs who are allergic to gluten ought to obtain their daily nutrients from non-glutinous cereal sources (Torbica et al., 2010). On the contrary, the absence of ‘gluten’ from the cereals makes it challenging to develop noodle and alike products because of the said protein’s capacity to hydrate, swell and form elastic dough. Dough prepared from non-glutinous cereals lacks in cohesiveness and elasticity which are essential for the formation of noodle strand.

However, attempts have been made to make use of non-wheat cereals for the preparation of noodles. Initially Chinese made noodles from rice only. Japanese made noodles from rice as well as mung bean starch or mix of these two. At CFTRI, noodles are also made using non-wheat cereals like rice, maize, sorghum, finger millet, foxtail millet, pearl millet and little millet and these are patented. Noodles prepared from cereals without gluten, such as rice, requires some starch gelatinization to act as a binder in lieu of gluten.
During the preparation of rice noodles, after size reduction, it is hydrothermally treated in order to induce partial gelatinization, and then made into dough, extruded and the noodles are again hydrothermally treated and dehydrated. This is placed in boiling water for about 3-4 min, decanted and then consumed.

In addition, the nutritional profile of gluten-free product – rice noodles will be a challenge. Till date, gluten-free biscuits, cakes, pasta and pizza, are commercially available. However, they are often based on pure starches, resulting in a dry, sandy mouth feel and poor overall eating quality. The scientific information about the gluten-free noodles on slowing down the carbohydrate digestibility and also the ability to ameliorate the complications of diabetes are scanty.

Hence, generation of scientific information on noodles prepared from brown rice/husked rice (pigmented and non-pigmented) in combination with whole chick pea and fenugreek, along with selected additives like guar gum and xanthan gum by cold extrusion technology would be helpful as health-promoting functional foods. Thus, these properties could be responsible for its usage as a vehicle, to facilitate the development of a special dietary regimen for the diabetic population.
Accordingly, investigation on the beneficial effects of noodles in general and its health–promoting functional food ingredients with special reference to their influence on the slow carbohydrate digestibility of the noodles were undertaken with the following objectives.

1. To study the physico-chemical properties, nutritional profile and antioxidant properties of raw materials and the product prepared-noodles.

2. To study the rheological, morphological and thermal properties before and after the processing of noodles.

3. Evaluation of rice noodles with low glycemic index / low carbohydrate digestibility by animal experiments.