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Hydration characteristics and saturation moisture content of kodo (*Paspalum scrobiculatum* L.) millet

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ABSTRACT

Soaking studies were conducted at different soaking temperatures *viz*., ambient (30-35), 40,50,60,70 and 80^{0}C and for different soaking durations of 30, 60, 90, 120, 180, 240, 300 and 360min.The rate of moisture absorption in the initial stage of soaking was found to be maximum for all the sets of experimental conditions. It was found that the saturation moisture content for all the soaking temperatures except 80^{0}C, was 71 per cent within the limit of this study. At 80^{0}C gelatinization of starch took place at longer duration. Data obtained is useful in deciding the parameters for processing of 'kodo' millet.

Key words : Hydration characteristics, Kodo millets, Soaking equation, Moisture content

Kodo millet (*Paspalum scrobiculatum* L.) is popularly comes in the category of coarse cereals and included in the broad category of cereals. Kodo millet is nutritionally superior to rice and wheat and presence of all the required nutrients, which make it suitable for industrial scale utilization in foodstuff. It is also a good source of protein, carbohydrate and rich source of minerals, fibers, vitamins and micronutrients. Kodo millet (*Paspalum scrobiculatum* L.) is a staple food of some tribals of North India especially in the belts of Madhya Pradesh (India). Husk will be separated from Kodo kernel since it is difficult to digest. Consumption of Kodo millet without separation of husk is often found to cause intoxication and poisoning (Antony *et al.*, 2003). Processing of 'kodo' millet is essential prior to consumption in the form of flour or roasting as popped product. Millets are suitable for diabetic diet but the characteristics flavour and difficulty in processing are the limitations for its incorporation in diets.

About half of our food is derived from only four plant species (rice, maize, wheat and potato). Millets are generally grown in traditional agricultural systems, with low inputs and lower productivity. There is a trend to replace millets with more productive crops such as wheat, maize or rice in more intensive systems.

There are many unique traits possessed by the different millet species, which should make millets an important component of improved agricultural systems. Few examples can be: The large number of grains can be grown from a single seed. The small seeds of millets generally are stored well for long periods, ensuring a continued food supply during lean season or when there is a crop failure. The small millet seeds often require less cooking or preparation time which is an important factor when women have less time to devote for food preparation. Number of ways of processing of millets in traditional and novel preparations. This can be a factor in increasing the market demand for millets. Many varieties of millets have excellent nutritional properties, high levels of essential minerals such as Iron and calcium. Finger millet is especially known for its characteristic of providing energy for a long time after it is being consumed. Millets are generally highly valued for their fodder, in addition to its high yield. The above examples indicate that millets have an important role to play as a component of more sustainable and productive agricultural technology.

The husk content of kodo millet is about 20.56% and this is removed tribal people by hand pounding. It is very laborious and time-consuming process. A day's work may lead to dehusking of 5-6 kg dehusked kodo. The rate of moisture absorption during soaking plays an important role in reducing the soaking time. Soaking was considered as a base step in kodo processing. Very little information is available on the hydration and therefore, present investigation was undertaken to study the effect of temperature and soaking time on rate of moisture absorption. To determine proper duration of soaking to achieve desired level of moisture content, the knowledge of saturation moisture content value is essential, which indicates the upper limit of moisture absorption by particular grain without any physico-chemical change in the material by Kulkarni and Bal (1986). The rate of moisture uptake by the grain is directly proportional to the difference of saturation moisture

Presently, the dehulling/milling is done by hand pounding using stone morter and wooden pestle with metal ring on the tip. Therefore, it was realized that an