

## Effect of domestic methods of processing on nutrient composition of oat (*Avena sativa*) flour

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### ABSTRACT

Food cereals are widely consumed all over the world as these are good sources of protein, carbohydrates, fat, crude fibre, vitamins and minerals. Common domestic methods like germination, parboiling, autoclaving etc. enhance the digestibility and nutritional value of cereals. The aim of the present study was to analyse the effect of domestic methods germination (12 and 24h), Parboiling (15-20 and 20-25min) and alkali treatment (20 and 30%) on nutrient content of oat (*Avena sativa*). The study was focused on important feature to make use of processed oat seed flour as it is regarded as super food, contain protein, iron, antioxidant, essential fatty acids and soluble dietary fibre ( $\beta$ -Glucan). The study revealed that amongst the treatments higher protein content was observed in parboiled oat flour ( $23.3 \pm 0.07 \text{g} 100 \text{g}^{-1}$ ) as compared to unprocessed oat flour. The maximum decrease in crude fibre content was observed in parboiling sample (54-62%) which was followed by germination and alkali treatment (50-47%). All the minerals (Ca, P, Fe) were significantly decreased at 0.05 and 0.01 level. Based on the results germination, parboiling and alkali treatment for oat grains should be popularized as a simple process for naturally fortifying food with nutrients could be suggested for processed oat flour based food preparation.

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**Key Words :** *Avena sativa* Oat, Germination, Parboiling, Alkali treatment, Nutrients

### INTRODUCTION

Health and nutrition is the most demanding and challenging field in this era and would continue to be in the future as well. Maintaining and increasing the nutritional quality of food during food processing is always a potentially important area for research (Guy and Gamlath, 2007). The different agro-climatic conditions in India give rise to the production of food articles. Out of these, cereals grains are the staple food consumed by the human race from the Asian times. The most important cereals for food used are wheat, rice and a number of coarse grain like maize, sorghum, bajra, ragi, barley and small millets like proso, finger and foxtail (Pragti, 2006). Cereals like wheat, rice, maize etc are the major component of the diets consumed in India. These coarse grains are mostly used for food purpose especially by the people of lower income groups.

*Avena sativa* is the scientific name of grass commonly known as Oat. It is annual grass, which is cultivated for its edible grain. It grows 2 to 4 feet with pale green narrow, flat leaves. The showing season is extended from October to December. The crops mature in about four and a half to five months for fodder. Two

and half cutting is taken January to march (Jain, 2002). Oats are generally considered 'healthy' or a health food being touted commercially as 'nutritious'. The discovery of the healthy cholesterol lowering properties has led to wider appreciation of oat as human food. Oat contains cereal protein *globulin* and also legume protein *avenalin*, as the major protein (80%) (Hann *et al.*, 1990). It is twice richer in protein, four times richer in calcium as compared to other grains (Gopalan *et al.*, 1997). Oats are the major source of protein, fibre, carbohydrate and micronutrients and thus having a positive impacts on individual's health (Thathola, 1999). It provides many health benefits such as serum cholesterol lowering (Anderson and Chen, 1986), reduced coronary heart diseases (Berg *et al.*, 2003) and diabetic mellitus (Pick *et al.*, 1996) reduced blood pressure (Kestin *et al.*, 1990) and cancer prevention in humans. Primary health beneficial oat component is  $\beta$ -Glucan, an enriched oat hydrocolloid (OH) ingredient with 5-50 per cent  $\beta$ -Glucan content (dry basis) commercially available (Lee *et al.*, 2005). It can be adopted by the person on a crash diet for losing weight. Another health benefit of oat is that it has high protein and fibre content, which is comparable to the pulse and wheat. Thus the easily