

## Grinding as a Most Economical Healthy Bioprocessing Biotechnique of Cereals for Postmodern Ruminants

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While broadly accessible, grinding is a most reasonable, simplest biotechnique for bioprocessing of cereal grains for ruminants. However, as this perspective article addresses, grinding using hammer mills have long been inaccurately viewed as a risky bioprocessing biotechnique, especially when used for soft cereals, such as wheat and barley [1-3]. The ruminant industry has, thus, long underestimated the irreplaceable on-farm practicality of grinding simply but astonishingly for its lower cost and much less complicated equipment, when compared to rolling and flaking systems using steam and pressure. The latter may not be necessary in many of the current world scenarios where moderated production levels are desired [4,5].

Evidence exists that grinding suffices in exposing cereal endosperm to adequately prolonged rumen fermentation and healthy microbial protein synthesis [1,2]. However, the concern that often arises is likely from an over-fermentation of finely ground grain particles [6]. This may be particularly true during initial hours post-feeding when organic acids accumulate and acidity rapidly rises. Extensive farm experience alongside research data suggest that above certain levels, it really does not matter which bioprocessing biotechnique is utilized [7]. It is rather dietary inclusion rates of grains that determine the degree of success in optimizing starch and protein use in both rumen and post-rumen. For instance, substantiated research findings indicate that the simplest less costly grinding is as much effective in maintaining rumen health and milk production as is the expensive steam-flaking equipment when barley grain is fed at 25-35% of diet dry matter [7].

Although more research is required to establish how grinding affects circadian rhythms of nutrient intake and microbial fermentation, and of splanchnoperipheral metabolism, grinding is exclusively fundamental in being simultaneously cheap and sufficient. The postmodern ruminant industry may greatly suffer from overproduction in many regions. Even in countries and provinces with inadequate domestic dairy and beef production, augmenting daily yields of milk and meat is not favorable at the expense of jeopardizing animal health and

longevity, which often results from overfeeding and over-processing of cereal grains [1,8].

Lastly but the foremost, education for scientists, extensionists, nutritionists, veterinarians, pragmatic students, and industrialists must highlight the overlooked facts and practices that today's world needs the most. Grinding continues to offer the optimum choice for bioprocessing of cereal grains in Iran, where the ruminant industry in recent years has been experiencing significant improvements in human food and economical outputs. The result of such a progress in many parts of the world will, at the very least, include dramatic improvements in food safety and security towards a sustainable environment.

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