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## Load of *Candida albicans* in raw chicken and mutton meat

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### Abstract

Meat is one of the relished food items because of its great taste and nutritive values. Poultry meat protein contains amino acids essential for health. Animal proteins are naturally occurring as well as are complete proteins. Meat is a good source of heme iron which helps to prevent anaemia and are only natural source of Vitamin B12 which helps in proper nervous system functioning. Lack of scientific butcher houses in most part of India, makes this favourite food item more vulnerable to pathogenic organisms. *Candida albicans* is isolated from raw chicken and mutton meat samples and presence of this organism can cause serious health hazards to human. Improper and faulty storage of raw meat as well as consumption of under-processed/undercooked meat possess a possible health risk for consumers. Meat Handlers and consumers need awareness about the meat borne diseases, hazardous impact on human health and its prevention and control measures.

**Keywords:** *Candida albicans*, human health, meat

### Introduction

Meat is basically animal flesh that is eaten as food <sup>[1]</sup>, raised and prepared for human consumption. Since prehistoric time, animal was hunted and killed for fun and meat. Paleontological evidence suggests meat constituted the major portion of the diet of earliest humans. With human civilisation, the bonding between animals and human leads to the domestication of certain species of animals like Cattle, Sheep, Goat, Pig and chicken. Over the decades, human population is increasing and to cop up with the requirement of animal origin meat or animal protein allowed the systemic production of meat and animal breeding with the vision to improve meat production. Now meat production is done on the industrial scale with scientific slaughter houses.

Meat is primarily composed of water, protein, and fat. Adult mammalian muscle flesh consists of roughly 75% water, 19% protein, 2.5% intramuscular fat, 1.2% carbohydrates and 2.3% other soluble non-protein substances, which include nitrogenous compounds, such as amino acids, and inorganic substances such as minerals. Raw meat is an important and probably major source of human food borne infections. Food borne diseases are responsible of severe illness and death around the world <sup>[2]</sup>. Animal origin foods are most important vehicle that helps in transmitting the pathogenic organisms to human <sup>[3]</sup>. Meat tissues normally get contamination during the various stages of slaughter and during its transportation <sup>[4]</sup>. Contaminated raw meat is one of the main sources of food borne illness <sup>[5, 6]</sup>. Illness due to contaminated food is most widespread problem and responsible for reduced economic productivity <sup>[7]</sup>.

*Candida albicans* is common species associated with human infections <sup>[8]</sup>. *Candida albicans* is an ovoid or spherical budding cell which produces pseudo mycelia both in tissues and in cultures. It is diploid fungus that grows both as yeast and filamentous cells. *Candida albicans* has been involved in causation and is responsible for chronic diarrhoea in HIV infected patients <sup>[9]</sup>. Mostly Children and immune deficient person are most prone to diarrhoea induced by *Candida albicans*.

Not many studies are available which actually assessed the load of *candida albicans* in raw meat samples. Study conducted to assess the load in raw chicken and mutton meat samples sold in retail shops of Kolkata reported that the meat samples are highly contaminated with *candida albicans* upto 80% <sup>[10]</sup>. This high load of *candida albicans* might be due to unhygienic slaughter and processing and also using unclean water from non-reliable sources. Cross contamination during manual skinning, evisceration and processing in the butcher shops are

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the reasons for the higher prevalence of *Candida albicans* in raw meat samples. One study reported that prevalence of *candida albicans* in chicken meat is around 80% <sup>[11]</sup>. Another study which was conducted at North Eastern state of India, reported 80% prevalence of *Candida albicans* in chicken meat samples <sup>[12]</sup>. Thanigaivel and Anandhan (2015) <sup>[13]</sup> reported the isolation of *Candida albicans* from 5% of raw chicken and mutton meat examined from the different market places in and around Chennai. It is estimated that, hardly 5 per cent of the poultry meat produced in India is from organized processing units while rest is from unorganized sector (retail shops) where due to poor hygiene there is ample scope for contamination <sup>[14]</sup>. *Candida* species was also isolated from the tables where meat carcasses are displayed <sup>[15]</sup>.

In most of the open meat markets or local small butcheries, there is a problem of selling meat in unsanitary environment such as open shelters. A high contamination was observed in meat shops as the same cutting blocks and knives were used <sup>[16]</sup>. Although a very few modern poultry processing plants have been established, majority of the consumers purchase meat from the roadside shops or small retailers where chickens are being slaughtered and dressed in unhygienic condition. Sometimes road side fast food operators procured raw meat from market and keep it for long time and sale it depending upon the customer demand. It is observed that daily unsold raw meat was not stored properly by the butchers for further marketing by next day, which is responsible of growth of *Candida albicans* in raw chicken and mutton meat.

### Conclusion

Human consuming contaminated chicken and mutton meat are at the risk of contracting *candida albicans* infection, especially children and immune compromised person. Unscientific storage of unsold meat by small scale butchers favours the growth of microorganism. This suggest suitable control measures like hygienic practice of handling and storage of raw meat and awareness campaign related to lack of proper scientific knowledge and health education amongst meat handlers and butchers. It is concluded that contamination of raw chicken and mutton meat should be prevented during slaughter, meat handling and processing to protect the public from infections and diseases.

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