neutral lipids in the oil were the highest, followed by glycolipids and phospholipids. Oleic followed by palmitic and linoleic were the major fatty acids in seed oil and its lipid classes. The seed oil being characterized by a relatively high amount of phytosterols, wherein the sterol marker was \( \beta \)-sitosterol followed by campesterol and stigmasterol. \( \gamma \)-Tocopherol was the major tocopherol isomer while the rest being \( \alpha \)-tocopherol. When \textit{C. paniculatus} oil and extra virgin olive oil were compared upon their radical scavenging activity (RSA) toward the stable 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical \textit{C. paniculatus} oil exhibited stronger RSA. In consideration of potential utilization, detailed knowledge on the composition of its oil is of major importance. The diversity of applications to which \textit{C. paniculatus} oil can be put gives this plant great industrial importance.

In conclusion, the \textit{C. paniculatus} seeds give considerable yield of oil and the oil seem to be a good source of essential fatty acids and lipid-soluble bioactives. The high oleic acid content makes the oil nutritionally valuable. Tocopherols and sterols at the level estimated may be of nutritional importance in the application of the seed oil. \textit{C. paniculatus} seeds could be nutritionally considered as a new non-conventional supply for pharmaceutical industries and edible purposes [Ramadan Mohamed Fawzy, Kinni SG, Rajanna LN, Seetharam YN, Seshagiri M and Mörsel Jörk-Thomas, Fatty acids, bioactive lipids and radical scavenging activity of \textit{Celastrus paniculatus} Willd. seed oil, \textit{Scient Hortic}, 2009, 123 (1), 104-109].

\section*{Poultry}

\begin{table}[h]
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\textbf{Effects of dietary black cumin seed on performance, egg traits, egg cholesterol content and egg yolk fatty acid composition in laying hens} & & \\
\hline
The researchers at Turkey carried out studies to determine the effects of dietary black cumin seed on performance, egg traits, egg cholesterol content and egg yolk fatty acid composition in laying hens during a 12 week period. For this purpose a total of 160 Lohmann Brown laying hens 36 weeks of age were allocated to four dietary treatments with one control group and three treatment groups. Black cumin seed (\textit{Nigella sativa} Linn.) was used at the level of 5, 10 and 15g/kg in the diets of the first, second and third treatment groups, respectively. Dietary treatments did not significantly affect body weight, feed intake, egg production, egg quality characteristics and blood parameters. Diets containing 10 and 15g/kg black cumin seed increased egg weight (\(P<0.01\)), improved feed efficiency (\(P<0.01\)) and decreased egg yolk cholesterol, saturated fatty acids (% of total fatty acid methyl esters) and the ratio of saturated to unsaturated fatty acids (\(P<0.05\)) compared to the diet of control group. Dietary black cumin seed at the level of 10 and 15g/kg had beneficial effects on egg weight, feed efficiency, egg cholesterol content and egg yolk fatty acid composition. Therefore, it can be used at the level of 10 and 15g/kg in the diets of laying hens [Yalç Sakine, Yalç Suzan, Erol Handan, Bu K Emre, Ö兹soy Bülent and Çak Serkan, Effects of dietary black cumin seed (\textit{Nigella sativa} Linn.) on performance, egg traits, egg cholesterol content and egg yolk fatty acid composition in laying hens, \textit{J Sci Food Agric}, 2009, 89(10), 1737-1742].
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\end{table}

\section*{Photocolorimetric determination of yolk colour in relation to selected quality parameters of eggs}

The researchers at Czech Republic carried out studies on the determination of egg yolk colourity and colour by means of a new photocolorimetric methodology based on the CIELAB system. Measurements (after gloss elimination) were performed using a Color Guide Sphere Spex photocolorimeter. For comparison, a standard method according
to the Yolk Colour Fan® (Roche) was used. Yolk colourity was measured in 252 eggs from layers of Isa Brown breed (aged 51-80 weeks). The colourity parameter \( L^* \) ranged from 43.42 to 68.51. The parameter \( a^* \) ranged from 0.05 to 13.49 and the parameter \( b^* \) ranged from 22.38 to 48.18. The normal (Gaussian) distribution curve for the individual parameters was validated. The resulting number of 8700 combinations of yolk colour parameters was given by multiplication of possible results in the experiment while taking into account the instrumental accuracy. All results according to the Yolk Colour Fan® (Roche) scale represented a range of three colour stripes. Thus, the photocolorimetric determination is more precise than the Yolk Colour Fan® (Roche) method. No correlation between yolk colourity parameters and yolk cholesterol concentration was found. The highest correlation \((r = -0.919)\) was observed between yolk colourity parameter \( b^* \)(yellow colour) and total egg weight.

**Fatty acid composition of certified organic, conventional and omega-3 eggs**

The scientists at Australia conducted studies to compare the fatty acid composition of commercially available conventional, certified organic and omega-3 eggs. Egg components were assessed, and the fatty acid composition of yolk lipids was determined by gas chromatography. Organic egg yolk contained a higher percentage of palmitic and stearic acids than did conventional yolk \((P < 0.05)\) with no differences observed in the monounsaturated or polyunsaturated fatty acid compositions. Compared with organic and conventional eggs, omega-3 egg yolk contained lower percentages of myristic and palmitic acids, and higher omega-3 fatty acids. In a sub-analysis of conventional egg types, the percentage of stearic acid in “cage” egg yolk was significantly lower \((P < 0.05)\) than those of “barn-laid” and “free-range” eggs. “Cage” eggs had a significantly lower percentage \((P < 0.05)\) of arachidonic acid than had “barn-laid” eggs. Consumption of omega-3 eggs has the potential to confer health benefits through the increase in intake of omega-3 fatty acids. With regard to organic or conventional methods of production, the small differences in saturated fatty acids observed in the study are unlikely to have any significant metabolic effect on the consumer.

**Combined effects of thymol, carvacrol and temperature on the quality of non conventional poultry patties**

The combined effect of thymol (0-300 ppm), carvacrol (0-300 ppm) and temperature (0-18°C) on the quality of non conventional poultry patties packaged in air and modified atmosphere (MAP: 40% \( \text{CO}_2; 30\% \text{O}_2; 30\% \text{N}_2 \)) was investigated by scientists at Italy using a simplex centroid mixture design. The patties were monitored for microbiological (total viable count, \textit{Enterobacteriaceae}, lactic acid bacteria, \textit{Pseudomonas} spp.) physico-chemical (\( \text{pH} \), colour) and sensory attributes. For the patties mixed with the antimicrobials and stored at low temperature (0-3°C) a reduction of the cell load of about 1-1.5 log cfu/g was observed. The log reduction was lower at the end of storage time and decreased with the increase of the temperature. For the poultry patties packaged in MAP the higher log reduction for \textit{Pseudomonas} spp. during all the storage time was observed. In both packaging atmospheres the combination of the essential oils and low temperature determined no modification for off-odour during the first 4 days of storage. Thus, the combined use of MAP and essential oils could have a commercial application to improve...
Cross-contamination versus undercooking of poultry meat or eggs - which risks need to be managed first?

Epidemiological studies show that poultry meat and eggs are important sources for consumers’ exposure to pathogens such as *Salmonella* and *Campylobacter*. There is a focus in many countries to reduce the level of human illness from food-borne pathogens. Reduction of the prevalence of contaminated poultry meat or eggs is one major area of focus. The other is risk communication to the consumer, where information aimed at changing the food preparation behaviour has been utilized as a risk management tool. The efficacy of messages such as ‘cook poultry meat and eggs thoroughly’ or ‘wash your hands’ will depend both on the ability to change consumer behaviour as well as where the risk can best be mitigated. In order to prioritise what message should be given to the consumer, the relative contribution of different exposure pathways finally leading to ingestion of the pathogens and resulting in illness needs to be known. It is important to know whether cross-contamination events or undercooking are the greatest risk lurking in consumers’ kitchens. A review of studies looking at the location of pathogens in food products has been performed and data regarding internal and external (surface) contamination of poultry meat with *Salmonella* spp. and *Campylobacter jejuni* and *C. coli* is presented by a scientist at Federal Office of Consumer Protection and Food Safety, Mauerstrasse, Berlin, Germany. In the case of eggs, data on internal contamination with *Salmonella* and for contamination of egg shells with *Salmonella* and *Campylobacter* are discussed. The results from published risk assessments for these pathogen-food commodity combinations have been evaluated and conclusions regarding the relative risk of internal and external contamination of poultry meat and eggs were drawn. In conclusion, cross-contamination events from activities such as use of the same cutting board for chicken meat and salad without intermediate cleaning or spreading of pathogens via the kitchen environment seem to be of greater importance than the risk associated with undercooking of poultry meat or eggs. Risk management options are discussed against the background of risk communication strategies used in different countries [Luber P, Cross-contamination versus undercooking of poultry meat or eggs - which risks need to be managed first?, *Int J Food Microbiol*, 2009, 134 (1-2), 21-28].

Roles of important candidate genes on broiler meat quality

Among various factors affecting broiler meat quality, the genetic attributes play an imperative role. The growth hormone gene imparts anabolic effects on skeletal muscle growth and myostatin. The growth and differentiation factor-B gene negatively regulates the myogenesis to determine the body mass. A review by scientists at Central Avian Research Institute, Izatnagar, Uttar Pradesh, India concerns the role of growth hormone, myostatin and other such important candidate genes affecting development and differentiation of skeletal muscles. The relationships of higher weight gain with meat quality traits with pH, water holding capacity, extract release volume, collagen solubility, texture and muscle proteins has been ascertained. It was inferred that fast growing broilers give relatively poor meat quality. It was concluded that there is a strong need for genetic manoeuvring regarding silencing of myostatin gene for better qualitative and quantitative broiler meat yields [Saxena VK, Sachdev AK, Gopal R and Pramod AB, Roles of important candidate genes on broiler meat quality, *World Poult Sci J*, 2009, 65, 37-50].
Indigenous naked neck chicken: a valuable genetic resource for Bangladesh

The review by scientists at Japan and Bangladesh aims at determining the potential usefulness of indigenous naked neck (INN) chicken for poultry production in a hot-humid climate. INN chicken has good heat dissipation mechanism and well adaptive to harsh tropical environment and nutrition, and is highly resistant to disease and superior to indigenous full-feathered and exotic egg-type or exotic naked neck counterparts in terms of growth rate, egg production, egg quality and meat yield traits. It can produce double the standard number of eggs under improved nutrition and management conditions. Crossbreds of INN with exotic chicken can perform even better than that of exotic chicken in respect of productive and reproductive traits. Consumers prefer the meat and eggs of INN chickens for reasons of pigmentation, leanness, taste, firmness and they are also used in special dishes. INN chicken prices are typically higher compared with those of products from exotic stocks. There are a very few published papers on the molecular aspects of INN chickens, although this is essential to determine genetic distance or relationship within or between INN chicken and indigenous full-feathered (IFF) varieties for future breeding plans. Therefore INN strains may be a promising and worthy genetic resource for the development of a breed or strain through selective or crossbreeding program suited to Bangladesh and in other countries where similar environments and socio-economic conditions exist. Thus, this review provides genetic and performance information on INN chickens which may be useful for further improvement of tropical breeds [Islam MA and Nishibori M, Indigenous naked neck chicken: a valuable genetic resource for Bangladesh, World Poult Sci J, 2009, 65, 125-138].

Chemical modification of flax reinforced polypropylene composites

An experimental study was carried out by researchers at South Africa on the static and dynamic mechanical properties of nonwoven based flax fibre reinforced polypropylene composites. The effect of zein modification on flax fibres was also reported. Flax nonwovens were treated with zein coupling agent, which is a protein extracted from corn. Composites were prepared using nonwovens treated with zein solution. The tensile, flexural and impact properties of these composites were analysed and the reinforcing properties of the chemically treated composites were compared with that of untreated composites. Composites containing chemically modified flax fibres were found to possess improved mechanical properties. The viscoelastic properties of composites at different frequencies were investigated. The storage modulus of composites was found to increase with fibre content while damping properties registered a decrease. Zein coating was found to increase the storage modulus due to enhanced interfacial adhesion. The fracture mechanism of treated and untreated flax reinforced polypropylene composites was also investigated from scanning electron microscopic studies [John Maya Jacob and Anandjiwala Rajesh D, Chemical modification of flax reinforced polypropylene composites, Composites part A: appl sci Manuf, 2009, 40 (4), 442-448].