Publications of KVI researchers – 2014


Letter to the Editor

Mycetyoma in a horse—curtains

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http://mmy.oxfordjournals.org/content/early/2014/01/05/mmy.myt014.short?rss=1
Fingerprint Profiles of Cuticular Fatty Acids in Three Adult Rhipicephalus Tick Species: A New Tool for Identification

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ABSTRACT

Ticks are obligatory blood parasites responsible for transmitting a variety of diseases to humans and animals. Since ticks share similar morphological features, accurate identification of tick species is important for control and management of disease-associated risks. Here, we report the application of gas chromatography mass spectrometry for analyses of cuticular fatty acid profiles for specific identification of female Rhipicephalus annulatus, Rhipicephalus bursa and Rhipicephalus sanguineus and establish the reliance of this assay on their nutritional status. Our findings demonstrated a unique pattern for each species under fed and unfed conditions. The cuticular fatty acid fractions were composed of a mixture of saturated and unsaturated straight-chain, terminally methylated and hydroxylated fatty acids. Our results show significant differences between the species tested under identical nutritional status, whereas the cuticular fatty acid profile pattern under fed versus unfed conditions in each species were similar. R. annulatus was distinguished by the high abundance of C10 to C14 fatty acids and the presence of 2-OH-C16, in contrast to R. sanguineus and R. bursa forming a higher percentage of C16 to C18. In addition, R. bursa was clearly distinguished from R. sanguineus by its high intensity of C14 and C20 as well as the presence of C12. Based on these results, we have established the ratio of the relative average abundance values of C16 to C14 as a Species Differentiation Index, enabling us to identify each of these species independent of its nutritional status. We suggest that fatty acid profiling may be useful as a relatively simple and reliable method to determine the species-specific identity of ticks.

http://www.ijvm.org.il/node/335
A Case Report of a Spontaneous Feline Metastasizing Uterine Fibrosarcoma in a Himalayan Cat

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ABSTRACT

The case report describes a highly malignant fibrosarcoma in a 15 year old Himalayan female cat presented to the clinic with a history of uterine hemorrhage and body weight loss. Physical examination revealed a large round mass of about 2-3 cm in the regions of the posterior abdomen. Radiographic examination confirmed the presence of a round mass which appeared to be associated with the uterus. At necropsy an irregular relatively firm single intramural mass of 2 to 3 cm diameter was detected in the mid-portion of the left horn of the uterus. Metastases were present in the lungs, thoracic pleura, diaphragm and mesenterium. The diagnosis of uterine fibrosarcoma was based on the histological mesenchymal spindle cell appearance of the tumor cells and the results of the immunohistochemical findings. Based on the negative results of Smooth Muscle Actin (SMA) antigen for the tumor cells, a final diagnosis of fibrosarcoma was made. To the best knowledge of the authors this is the first diagnosis of a spontaneous uterine fibrosarcoma in a cat without signs of uterine inflammation or pyometra and with widespread metastases.

http://www.ijvm.org.il/node/340
Case Report: Contagious Ecthyma - Deviations in the Anatomical Appearance of Lesions in an Outbreak in Lambs in Israel


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ABSTRACT

Contagious ecthyma (orf) is a highly contagious viral disease of small domestic and wild ruminants usually affecting young animals with economic and zoonotic implications. The disease is characterized by the formation of vesiculo-proliferative lesions on the lips, nostrils and around the eyes, also on the udder of nursing ewes of affected lambs. Rarely the lesions can be seen in the oral cavity and gastrointestinal tract. In this case 2 lambs of 4 month of age where submitted to the Kimron Veterinary Institute for post mortem examination. This report describes findings of proliferations consistent with orf found on gingival mucosa and ruminal epithelium which are relatively rare, however without external lesions. The diagnosis of ecthyma was confirmed by PCR.

HTTP://WWW.IJVM.ORG.IL/NODE/342
Newcastle Disease Virus in Little Owls (*Athene noctua*) and African Penguins (*Spheniscus demersus*) in an Israeli Zoo

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Summary
Newcastle disease is a contagious and often fatal disease, capable of affecting all species of birds. A velogenic Newcastle disease virus (vNDV) outbreak occurred in an Israeli zoo, in which Little owls (*Athene noctua*) and African penguins (*Spheniscus demersus*) were found positive for presence of NDV. Some of them have died. The diagnostic process included: post-mortem examination, histopathology, real-time RT-PCR assay, virus isolation, serology, intracerebral pathogenicity index and phylogenetic analysis. A vNDV was diagnosed and found to be closely related to isolates from vNDV outbreaks that occurred in commercial poultry flocks during 2011. All isolates were classified as lineage 5d.

Keywords:
- African penguin;
- *Athene noctua*;
- Little owl;
- Newcastle disease virus;
- *Spheniscus demersus*

Bagaza virus and Israel turkey meningoencephalomyelitis virus are a single virus species

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Received 11 November 2013. Accepted 22 January 2014.

Abstract

Bagaza virus (BAGV) and Israel turkey meningoencephalomyelitis virus (ITV) are classified in the Flavivirus genus of the Flaviviridae family. Serologically, they are closely related, belonging to the Ntaya serocomplex. Nucleotide sequences available to date consist of several complete sequences of BAGV isolates, but only partial sequences of ITV isolates. Sequence comparisons of partial envelope (E) and NS5 regions reveal a close genetic relationship between these viruses. Despite this, BAGV and ITV are considered as separate virus species in the database of the International Committee on Taxonomy of Viruses (ICTV). In this work, complete nucleotide sequences for five ITV isolates are provided, thereby permitting a phylogenetic comparison with other complete sequences of flaviviruses in the Ntaya serogroup. We conclude that BAGV and ITV are the same virus species and propose that both viruses be designated by a new unified name: Avian meningoencephalomyelitis virus (AMEV).

Keywords:
Bagaza Virus
Flavivirus
Israel turkey meningoencephalomyelitis virus
Ntava
Phylogenetic analysis

http://vir.sgmjournals.org/content/early/2014/01/23/vir.0.061465-0.full.pdf+html
Short Communication

Seroprevalence and Rate of Infection of Equine Influenza Virus (H3N8 and H7N7) and Equine Herpesvirus (1 and 4) in the Horse Population in Israel

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Received 14 November 2013, Revised 10 January 2014, Accepted 16 January 2014, Available online 22 January 2014

Abstract

Equine influenza and equine rhinopneumonitis are among the Office International des Epizooties or the World Organisation for Animal Health notifiable, contagious respiratory diseases. Although vaccination of horses in Israel against equine influenza virus (EIV) and against equine herpesvirus (EHV) is routinely performed, information regarding the occurrence and the epidemiology of the diseases is lacking. We hereby attempt to determine seroprevalence and rate of infection for EHV-1 and 4 and for EIV in horses distributed throughout Israel and describe demographic and environmental risk factors associated with seroprevalence. Despite the fact that last reported isolation of EIV in Israel occurred in 2007, we found a 26.4\% (29/110) (95\% confidence interval [CI]: 18.18–34.62) seroprevalence for H3N8, a 16.4\% (18/110) (95\% CI: 9.49–23.31) for H7N7, and a 6.4\% (7/110) (95\% CI: 1.83–10.97) rate of seroconversion for H3N8, suggesting current and active circulation of EIV in horses in Israel. Age, housing management type, and type of farm activity were significantly associated with seroprevalence, with activities allowing exposure to new horses positively associated with seroprevalence to EIV and an only pasture housing management negatively associated with seroprevalence. No association was detected between other demographic variables (gender, breed, and color) and environmental factors (climatic regions). Seroprevalence to EHV-1 and 4 were very low (<1\%) and very high (>99\%), respectively, raising questions regarding the appropriate vaccination guidelines. Our findings of the occurrence of EIV in horses in Israel imply an underdiagnosis of this virus in this country and warrant further investigation as to the strains that circulate in this region and their accordance with the current vaccine strains.

Keywords
Herpesvirus;
Influenza;
Equine;
Seroprevalence;
Force of infection

http://dx.doi.org/10.1016/j.jevs.2014.01.012
Acute maduramicin toxicosis in pregnant gilts

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Article history:
Received 23 August 2013
Accepted 25 March 2014
Available online 3 April 2014

Keywords:
Gilts
Pigs
Maduramicin
Toxicosis

Abstract
Ionophores are used as feed additives for the control of coccidiosis and growth promotion in farm animals. Reports of maduramicin toxicosis in farm animals are scarce. The present work describes an acute maduramicin toxicosis affecting 22 pregnant gilts, 2 pregnant sows and 2 boars, resulting in a total mortality of 65% within 2 days. The clinical and histopathological findings observed shared similar characteristics to acute ionophore toxicosis in pigs, being characterized by severe myodegeneration in skeletal muscle and degenerative changes in the myocardium. Important clinical pathology indices found were elevated levels of CPK and ALT. In contrast to the pregnant gilts, the two pregnant sows completely recovered after 1 month and farrowed 2 months after the intoxication event healthy piglets. The lack of effect of maduramicin on the fetuses might be indicative of poor placental penetration of maduramicin. Moreover, the present work reports for the first time maduramicin levels in livers (0.5 mg/kg) of gilts exposed to lethal concentrations of maduramicin (18.5 mg/kg) in the feed. As the average feed intake of the gilts was estimated to be 3.5 kg feed/day, the mean maduramicin intake leading to the observed high mortality rate was 0.4 mg/kg body weight/day.

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www.elsevier.com/locate/foodchemtox
Bagaza virus and Israel turkey meningoencephalomyelitis virus are a single virus species

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Received 11 November 2013
Accepted 22 January 2014

Abstract

Bagaza virus (BAGV) and Israel turkey meningoencephalomyelitis virus (ITV) are classified in the genus Flavivirus of the family Flaviviridae. Serologically, they are closely related, belonging to the Ntaya serocomplex. Nucleotide sequences available to date consist of several complete sequences of BAGV isolates, but only partial sequences of ITV isolates. Sequence comparisons of partial envelope (E) and NS5 regions reveal a close genetic relationship between these viruses. Despite this, BAGV and ITV are considered as separate virus species in the database of the International Committee on Taxonomy of Viruses. In this work, complete nucleotide sequences for five ITV isolates are provided, thereby permitting a phylogenetic comparison with other complete sequences of flaviviruses in the Ntaya serogroup. We conclude that BAGV and ITV are the same virus species and propose that both viruses be designated by a new unified name: Avian meningoencephalomyelitis virus.

http://vir.sgmjournals.org/content/95/Pt_4/883.long
Seroepidemiology Survey and Isolation of Swine Influenza Viruses from Subclinical Infections in Israel During the Years 2009-2011

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ABSTRACT

The exposure of the swine population in Israel to swine influenza viruses (SIV) was actively assessed during the years 2009-2011 by serological and virological assays. Around 90% of 777 sera from 52 herds and 2 wild boars were positive by ELISA. The antibody subtype specificity was determined on 407 sera from 27 herds by haemagglutination inhibition assay with 4 viruses, A/sw/Flandre/1/98(H3N2), A/sw/Scotland/410440/94(H1N2), A/sw/Cotes d'Armor/0388/09(H1N1) and A/ck/Israel/1525(H9N2). All herds had antibodies to SIV H1N2 and H3N2 while only 10 herds had antibodies to SIV H1N1. The highest HI titers against SIV H1N2, SIV H3N2 HI titers were of intermediate values, while SIV H1N1 exposure produced the lowest titers. No antibodies to AIV subtype H9N2 were detected. Sub-clinically infected pigs yielded five positive samples, of which two were identified as H3N2 and the pandemic H1N1, respectively. We suspect that these were acquired by contact of the pigs with infected humans.

Keywords:
Swine Influenza Virus, Active Surveillance, Haemagglutination Inhibition, Virus Isolation, Real Time Reverse Transcription RRT-PCR, ESNIP 3.

http://www.ijvm.org.il/Journals
Long term effects of Escherichia coli mastitis.

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Abstract

Escherichia coli is one of the most frequently diagnosed causes of bovine mastitis, and is typically associated with acute, clinical mastitis. The objective of the present study was to evaluate the long term effects of intramammary infections by E. coli on milk yield and quality, especially milk coagulation. Twenty-four Israeli Holstein cows diagnosed with clinical mastitis due to intramammary infection by E. coli were used in this study. Mean lactation number, days in milk (DIM) and daily milk yield (DMY) at the time of infection was 3.3 ± 1.3, 131.7 days ± 78.6 and 45.7 L ± 8.4, respectively. DMY, milk constituents, somatic cells count (SCC), differential leukocytes count and coagulation parameters were subsequently assessed. Two patterns of inflammation were identified: 'short inflammation', characterized by <15% decrease in DMY and <30 days until return to normal (n = 5), and 'long inflammation', characterized by >15% decrease in DMY and >30 days to reach a new maximum DMY (n = 19). The estimated mean loss of marketable milk during the study was 200 L/cow for 'short inflammation' cases, and 1500 L/cow for 'long inflammation' ones. Significant differences between 'short' and 'long inflammation' effects were found in almost all parameters studied. Long-term detrimental effects on milk quality were found regardless of clinical or bacteriological cure of affected glands.

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KEYWORDS:

Dairy; Escherichia coli; Leukocyte; Mastitis; Milk quality
PMID: 24906501 [PubMed - in process]

http://www.sciencedirect.com/science/journal/00220302/97/6
Options for Handling Chronic Subclinical Mastitis During Lactation in Modern Dairy Farms

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Abstract

Subclinical mastitis is the predominant form of mastitis in modern cow herds, and greatly affects dairy economics. The aim of the present study was to exploit available on-line computerized data to suggest a rational procedure that would enable effective treatment of infected udders. The cows were divided into five categories: no intervention, antibiotic treatment, drying-off specific quarter(s) with casein hydrolyzate, drying-off the whole cow and culling. The first step in the analysis was identification of the infected udder and the causative pathogen. The second step was to determine the sensitivity of the pathogen (mostly bacteria) to antibiotic treatment. Of the 62 high somatic cell count (SCC) cows, 40 (64.5%) were cured. The highest cure was achieved in mammary glands infected with Streptococcus dysgalactiae, followed by those with Staphylococcus chromogenes. No differences were found for the cure of cows in their first to third lactations but were significantly lower in lactations 4 and 5. When treatment was applied within a month from the estimated occurrence of the infection, the success rate was over 73%, whereas treatment after 3 months or more achieved significantly lower success. The average SCC towards the time of antibiotic treatment was about 1.5 × 106 cells mL−1. At first milk testing, about 1 month after treatment, SCC was at a level of about 100,000 cells mL−1 and it remained at that level for the subsequent 3 months. The 17 cows that underwent drying-off of a single infected gland had SCC > 106 cells mL−1 for at least 3 months. Drying off of the secretion from the infected glands reduced the overall SCC to < 200,000 cells mL−1. Milk yield from the uninfected three quarters decreased on average by about 9% during 30 days post-treatment. Treatment options of subclinical mastitis according to the results require early detection, identification of the bacterium and calculation of the economic benefit, taking into account the conditions and the value of the animal to the farmer.

Key words: Mastitis, Treatment, Casein hydrolyzate, Herd management

http://www.ijvm.org.il/Journals
Subclinical mastitis in goats is associated with upregulation of nitric oxide-derived oxidative stress that causes reduction of milk antioxidative properties and impairment of its quality

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Abstract

The aim of this study was to verify the existence of a nitric oxide (NO) cycle in goat milk and to study how changes in it affect milk composition during subclinical mastitis. Fifteen lactating dairy goats in which one udder-half was free from bacterial infection and the contra-lateral one was naturally infected with various species of coagulase-negative staphylococci were used. In comparison to uninfected glands, subclinical mastitis was associated with a decrease in milk yield, lactose concentration, and curd yield and an increase in nitrite and nitrate concentrations and with measurements reflecting increased formation of NO-derived free-radical nitrogen dioxide. The occurrence of NO cycling in goat milk was largely confirmed. The increase in the NO-derived stress during subclinical infection was not associated with significant increase in oxidatively modified substances, 3-nitrotyrosine, and carbonyls on proteins, but with increased levels of peroxides on fat. However, the relatively modest nitrosative stress in subclinically infected glands was associated with significant reduction in total antioxidant capacity and vitamin C levels in milk. We concluded that subclinical mastitis in goats caused by coagulase-negative staphylococci imposes negative changes in milk yield, milk quality for cheese production, and negatively affects the nutritional value of milk as food. Thus, subclinical mastitis in goats should be considered as a serious economic burden both by farmers and by the dairy industry.

Key words: goat, milk, subclinical mastitis, oxidative stress, antioxidant capacity

http://www.sciencedirect.com/science?_ob=ArticleListURL&_method=list&ArticleListID=-601965009&_sort=r&_st=4&md5=644a2ae59ba447ea850ee42e84d65aa9&searchtype=a#
Identifying the major bacteria causing intramammary infections in individual milk samples of sheep and goats using traditional bacteria culturing and real-time polymerase chain reaction.

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Abstract

Use of DNA-based methods, such as real-time PCR, has increased the sensitivity and shortened the time for bacterial identification, compared with traditional bacteriology; however, results should be interpreted carefully because a positive PCR result does not necessarily mean that an infection exists. One hundred eight lactating dairy ewes (56 Manchega and 52 Lacaune) and 24 Murciano-Granadina dairy goats were used for identifying the main bacteria causing intramammary infections (IMI) using traditional bacterial culturing and real-time PCR and their effects on milk performance. Udder-half milk samples were taken for bacterial culturing and somatic cell count (SCC) 3 times throughout lactation. Intramammary infections were assessed based on bacteria isolated in ≥2 samplings accompanied by increased SCC. Prevalence of subclinical IMI was 42.9% in Manchega and 50.0% in Lacaune ewes and 41.7% in goats, with the estimated milk yield loss being 13.1, 17.9, and 18.0%, respectively. According to bacteriology results, 87% of the identified single bacteria species (with more than 3 colonies/plate) or culture-negative growth were identical throughout samplings, which agreed 98.9% with the PCR results. Nevertheless, the study emphasized that 1 sampling may not be sufficient to determine IMI and, therefore, other inflammatory responses such as increased SCC should be monitored to identify true infections. Moreover, when PCR methodology is used, aseptic and precise milk sampling procedures are key for avoiding false-positive amplifications. In conclusion, both PCR and bacterial culture methods proved to have similar accuracy for identifying infective bacteria in sheep and goats. The final choice will depend on their response time and cost analysis, according to the requirements and farm management strategy.

Milk metabolites as indicators of mammary gland functions and milk quality

Nissim Silanikove, Uzi Merin, Fira Shapiro, Gabriel Leitner

Abstract

The assumption that metabolites derived from the activity of the mammary gland epithelial cells reflects changes in milk secretion and its coagulation properties was tested in dairy cows. The experiment included cows with uninfected udders and cows with one of the glands infected by different bacteria species. Analysis were carried at the cow level (including all four glands), or at the gland level. High and significant correlations among the concentrations of lactose, glucose, glucose-6-phosphate, milk related respiratory index (the ratio between the concentrations of citrate/lactate+malate in milk) and milk-derived glycolytic index (the ratio between glucose-6-phosphate and glucose in milk) and milk clotting parameters were found. The physiological basis for these relations and their ability to predict the deterioration in milk quality in subclinically infected glands and in glands previously clinically infected with Escherichia coli are discussed.

http://journals.cambridge.org/action/displayIssue?jid=DAR&tab=firstview
Nitrite and catalase levels rule oxidative stability and safety properties of milk: a review

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Abstract

This review focuses on recent evidence showing that various types of udder inflammation (mastitis) are associated with increased concentration of NO˙-derived metabolites, nitrite and nitrate, and oxidatively modified organic components under commercial farming and experimental conditions. In milk, NO˙ constantly cycles through: (i) auto oxidation to nitrite; (ii) hydrogen peroxide-dependent conversion of nitrite into NO 2˙ by lactoperoxidase; (iii) interaction of NO 2˙ with thyl (RS˙) radicals on proteins formed by NO˙ to generate S-nitrosothiols; and (iv) disintegration of NO˙ from S-nitrosothiols, which completes the cycle. The main mechanism which restrains this cycle is conversion of nitrite to nitrate by catalase in a hydrogen peroxide dependent manner. The main source of hydrogen peroxide in milk derives from the oxidation of secreted hypoxanthine and xanthine by xanthine oxidoreductase. Formation of NO 2˙ has an important role in the glandular innate defense system because it has bactericidal effects towards major pathogens that infect the mammary gland. However, increased formation of NO 2˙ that occurs during mastitis and extended storage of milk for more than three days, even when kept in cold, dark conditions, induce nitrosative stress on milk organic components. Nitrosative stress in milk is reflected by a marked increase in the concentration of 3-nitrotyrosine, carbonyl and lipid peroxides. Thus, it is possible that current criteria for dairy plants acceptance of milk overlook important information on milk safety for consumption by humans. The literature regarding the presence of nitrite and nitrate in milk under experimental, farm and marketed milk is reviewed and the potential implications discussed. Relevant conclusions to improve safety of milk for human consumption are derived, and the particular importance in applying such recommendations for milk designated for the manufacturing of infant formulas is outlined.

http://pubs.rsc.org/en/journals/journalissues/ra
Bifenthrin Toxicity in a Dog

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Abstract

A 17-month-old male King Charles cavalier was presented with acute onset of generalized body tremors and facial twitching after being exposed to 2 different compounds of the pyrethrins/pyrethroids group and imidacloprid. Bifenthrin toxicity was confirmed by gas chromatography mass spectrometry. Initial therapy consisted of diazepam, metacarbamol and IV fluids, followed by general anesthesia with isofloran and diazepam CRI. Blood specimens were collected for following bifenthrine blood levels over time. Supportive nursing care was provided as needed. Twenty-four hours post admission, the dog was no longer under general anesthesia. Seventy two hours post admission the dog was discharged had no menace response, was alert and responsive when stimulated, ataxic while walking and showed normal eating behavior. Pyrethroid toxicosis in dogs was to our best knowledge never been reported before. We describe the clinical signs, bifenthrin pharmacokinetics during hospitalization, and the successful treatment of bifenthrine toxicity in a young dog.

http://www.jscimedcentral.com/Pathology/pathology-2-1030.pdf
Differential diagnosis of fowlpox and infectious laryngotracheitis viruses in chicken diphtheritic manifestations by mono and duplex real-time polymerase chain reaction

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Received: 29 Jun 2014
Accepted: 8 Oct 2014
Accepted author version posted online: 15 Oct 2014
Published online: 19 Nov 2014

Abstract

Infectious laryngotracheitis virus (ILTV) and fowlpox virus (FPV) cause diphtheritic lesions in chicken tracheas and can simultaneously infect the same bird. A differential molecular diagnostic test, the duplex real-time polymerase chain reaction, is now reported using ILTV and FPV vaccine viruses and clinical samples from chickens, either uninfected or naturally infected with ILTV or FPV, or with both viruses. The dual virus amplification by real-time polymerase chain reaction was demonstrated to behave similarly to monoplex amplification, in spite of the fact that the real-time exponential amplification plots of the vaccine viruses were more illustrative than those of the clinical samples.

http://www.tandfonline.com/doi/full/10.1080/03079457.2014.977223