Conclusions. We applied the analysis of the "bowtie" diagram to display the risk, indicating a number of possible causes and consequences. Applying this analysis is advisable in the case when there are clear independent ways of development of events leading to failure.

An analysis of the "bow tie" diagram is simpler to understand than the "fault tree" and the "tree" of events, and therefore its use may be appropriate as a means of information interaction in cases where the analysis is carried out using more complex techniques.

PROBLEMS RELATED TO QUALITY ANALYSIS OF HONEY

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Introduction. At present, EU Directive 74/409 of 20 December 2001 has given definition of honey as a 100% bee product, from which nothing needs to be deleted and nothing has to be added. The EU legislation, like the domestic honey standard, is based on the following:

- Pollen study;
- Physical-chemical studies (moisture measurement, Hydroxymethylfurfural, diastases etc.);
- Chromatographical analysis of sugars.

Of these, the first two paragraphs are considered obsolete because of the emergence of new ways of honey falsification, which are difficult to prove. For example, pollen analysis makes it possible to determine not only the naturality of honey, but also its geographical and botanical origin.

However, large processing companies often filter honey using ultrafiltration technology to keep the product in a non-crystalline state for long periods of time. Thus, along with honey, devoid of pollen, and therefore unsuitable for pollen analysis, the market also gets cheap fake honey under the guise of natural.

Aim. Identification of problems related to the analysis of honey quality.

Materials and methods. Often falsifiers add to honey high-fructose corn syrup, close in the sugar content to natural honey. Detection of this type of falsification is based on the complex method of mass spectrometry measurement of the ratio of Carbon $^{13}C/^{12}C$ isotopes. Natural honey has a certain ratio of $^{13}C/^{12}C$, because bees chose as a source of nectar plants with C-3 type of photosynthetic fixation.

Corn, sorghum and sugar cane belong to plants with C-4 type of photosynthetic fixation and therefore have an increased content of the 13C isotope, and consequently, the negative value of the $^{13}C/^{12}C$ ratio. For natural honey it is about -25 ‰, for sugar cane about -11 ‰, for corn a little less – 20 ‰. Detecting beet sugar by this method does not seem possible, because beet belongs to plants of type C-3 and has a ratio of $^{13}C/^{12}C$ at the level -25,5 ‰.

Also, this technique is not suitable for detecting the falsification of honey by products of other plants of type C-3, such as: rice, wheat, barley, rye, potatoes, soybeans. In this case, determine the difference between the content of 13C in honey and its protein fraction. If the deviation of the value in honey to the direction of a C-3 plant is obtained, then the forging of honey can be concluded.

Results and discussion. However, the improvement of honey falsification methods inevitably leads to improved methods of counterfeit detection. For example, in 2002, AV Aganin has developed a method of honey biotesting, which allows simultaneously controlling the freshness, the presence of fermentation, heat damage to honey and falsification. The method is based on the fact that yeast, which is always contained in natural honey, is very sensitive to heating. Instantaneous heating of honey to 70° C followed by rapid cooling completely inactivates yeast, without significantly reducing diastase activity.

To study the sample, the solution of the honey is centrifuged, centrifugate is separated, micropreparation, colored with methylene blue is prepared, and examined under a microscope at 600x magnification. Living yeast cells are poorly colored or not colored at all, dead ones – colored blue.

The results are analyzed as follows: if in the preparation dominate small (0.1-0.2 microns) uncoloured or slightly coloured yeast cells with barely noticeable shell – the honey is fresh and it was not heated; a large

number of unpainted large (2-10 microns) cells that gemmate (15% or more) – honey ferments, but not heated; Many coloured large cells that gemmate, indicate that the honey fermented and it was heated.

The predominance of small intensively coloured yeast cells with two-contour shells – the honey was stored for more than a year or it was spoiled by overheating. The complete absence of yeast in the drug is the evidence of honey falsification.

Not so long ago, new analytical methods for falsified honey have been developed. At the University of Lyon, using liquid chromatography, it was found that some polysaccharides do not occur in honey. For example, in acacia or polyfloric honey, it is relatively easy to prove even 1% admixture of grain syrups.

Also, it is now possible to prove the presence of foreign enzymes in honey. Samples with added amylase from Aspergillus oryzae were investigated at the Institute of Chemical Technology (Prague) and found that the bee-produced amylase was different from the microbiological enzyme added to counterfeit honey.

Conclusion. So, during our work, we have reviewed the methods for determining the quality of honey and typical problems encountered by research laboratories at both the state and international levels in detecting counterfeit honey.

IMPLEMENTATION OF RISK MANAGEMENT IN PRODUCTION OF INACTIVATED VACCINE AGAINST GOOSE PARVOVIRAL ENTERITIS

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Introduction. Identify internal and external factors impact on the organization is an important step in making the best decisions to achieve the objectives. In carrying out this task in the management of quality using ISO 31000:2018 Risk management – Guidelines, ISO Guide 73:2009 Risk management – Vocabulary and IEC 31010:2009 Risk management – Risk assessment techniques ISO, containing approaches to risk management and terms for adequate interpretation.

The principles of risk management are effectively used in many areas such as finance, construction, automotive and others. Increasingly, risk management approaches are used in pharmaceutical manufacturing and veterinary medicine.

Some companies use several risk management methods. Thus, FTA (Fault Tree Analysis) and HAZOP (Hazard and Operability Study) were used in manufacturing of radiopharmaceutical the drug «Fluorodeoxyl glucose ^{18}F, solution for injections». It also shows the application of a risk management system using several methods in a pharmaceutical company ОАО «ИнтерХим».

Philip Thomas and his colleagues conducted a research showing the risks of applying individual risk management methods and the negative impact on the quality of the process when they are being used, indicating the need to use several methods, taking into account the direction of activity, the features of technological processes, etc.

Aim. The purpose of our work was to conduct a study on identifying and analyzing existing risks using the methods of causation analysis and FMEA (Failure Mode and Effects Analysis) in the production of an inactivated vaccine against goose parvoviral enteritis.

Materials and methods. During the course of work, the analysis of causal relationships was used to identify possible risks by constructing the Ishikawa charts. The FMEA method in order to determine possible consequences and ways to avoid them.

Results and discussion. Risk management consists of the following steps:

- identification,
- analysis,
- a plan of response,
- its implementation,
- further control.