

ting. Aim of the research was to find out character of APD influence on formation of unevennesses of the finished surface and on runout of the cutting instrument.

Analysis of the experimental data, obtained for different machining mode combinations, showed that unevenness after cutting APD is less than after traditional cutting. When using the experiment method not only modulus of center-line-average surface finish  $R_a$  (mkm) occurs. When cutting with APD this parameter of quality corresponds to finishing work, and when using traditional cutting at the same modes (speed and depth of cutting, supply) – semifinishing. That means that in some cases the method allows reducing quantity of technological transits, necessary to get the required level of unevenness. Positive impact of APD is also proved by profilograms of microasperities of the finished surfaces (height of microasperities of the surfaces finished with APD is lower and their profile is more stable). Reduction of rates of wear of cutting blades while finishing with APD was fixated.

Formation of unevennesses of the finished surface and runout of the cutting instrument are defined by the character of interaction of cutting instrument, forming facing and the finished surface. Processes in the zone of cutting (zones of contact interaction and formation of facings) are determined by temperature-deformation principles of high-speed plastic deformation. Except mode parameters of fulfilling the finishing, simultaneous interaction of features of instrument and finishing materials, subject of conditions, forming mechanisms of contact interaction and stipulating change of types of facing formation, is considerably determined by mechanical and thermophysical characteristics of the finishing material. Mechanical (firmness, strength, ductility) and thermophysical (thermal conduction, thermal capacity) features of steel determine intensity of heat output and heat outflow in the zone of cutting, load on cutting wedge of the instrument, change of types of contact interaction. While finishing with APD resistance to deformation and parameters of heat output in the zone of cutting should differ from the case of traditional finishing and consequently conditions of separation of metal of the cut layer and finished surface and conditions of contact interaction should change. Change of the features of the hardened metal should provide more favorable conditions of contact interaction to reduce intensity of runout of the cutting instrument and getting less unevenness of the finished surface.

Thus, cutting with APD is an effective method of workability of stainless steels. In a num-

ber of cases reduction of unevenness allows reducing quantity of necessary technological transits, and by that improving efficiency of the finishing. Reason for such influence of APD should be favorable change of process parameters in the zone of cutting.

---

The work is submitted to the International Scientific Conference «Production technologies», Italy, Rome – Florence, 12-19 September, 2010, came to the editorial office on 20.07.2010.

---

#### **COMPLEX AND RATIONAL USE FISH RAW MATERIAL AT PRODUCTION OF THE FISH PRODUCTS**

Saltanova N.S., Saltanov D.M.

*Kamchatka State Technical University,*

*e-mail: [Saltanova-ns@yandex.ru](mailto:Saltanova-ns@yandex.ru)*

---

There was developed resource saving technology of herring preserves, which allows to rationally use raw, to cut lasting of the technological process, to lower the production costs and rise the economical effectiveness of production. There were defined the optimal conditions of getting broths of herring wastes. There were developed the recipes of fills at the base of broth from collagen-containing wastes of herring with the addition of vegetable raw.

---

Preserves of aquatic are delicacy products, which are always demanded by consumers. While the production of reserves the taste, the smell and consistence, which is peculiar to ripen salted fish, form while the salting because of the processes of hydrolysis of protein and lipids of muscular tissue, oxidation of lipids and reactions of synthesis between them. At the same time there is universally recognized the fact of inhibition with sodium chloride of the process of biochemical ripening of salted fish (introduction of the salt leads to the slowdown of ripening). There was developed the resource saving technology of preserves from herring, which allows to rationally use the raw, to shorten the lasting of technological process, to lower production costs and rise economical effectiveness of production [1].

The use in the fish production of deep cutting of fish leads to the forming of collagen-containing wastes (skin, fins, bones), which are reasonable to use for getting fish broth. Introduction of such technologies into the production allows not only to spread the assortment of food products from hydrocoles, but also to solve actual problem of rising of level of food use of extracted

raw, which is priority at the development of fish sector of Russia.

The aim of the work is the development of technologies of preserves from the Pacific herrings at the gel fills from the collagen-containing wastes. According to the stated aim there was foreseen the solving of the following tasks:

- study of influence of the different technological factors (type of the environment, lasting of the thermal treatment) on the behavior of broths from collagen-containing fish wastes, their gelling ability; explanation of the optimal conditions of getting fish broths;
- development of recipes f fills from the collagen-containing fish wastes;
- development of technology of preserves with the use of the new way of ripening in the different sauces.

While the thermal treatment of herring wastes the collagen in the form of gel substances passes into the water environment, forming the broths of different concentration. The hydrolysis of collagen into a water environment depends on different technological factors: temperature, lasting of thermal treatment, pH medium [2, 3, 4]. The researchers founded the optimal correlation of the water and fish wastes, which is 1:1, the optimal temperature of hydrolysis– 100°C. While this regime the broths have the best showings of kinematic viscosity and mass fraction of dry substances [2, 3].

We have carried out the researches by the use as the water environment for the hydrolysis of the collagen from the herring wastes of curd whey (pH 4,7) [4]. The results of the experiment showed that broths, received at the base of whey, have more viscosity, higher temperatures of melting and gelling, than broths received from water (table 1).

**Table 1**

Physical behavior of broths from the herring wastes

Showings	Fish broth out of curd whey				Fish broth out of water			
	Lasting of hydrolysis, min							
	15	30	45	60	30	45	60	75
Temperature of gelling, °C	5,0	5,0	2,0	-	1,0	1,0	1,5	1,0
Temperature of melting, °C	8,0	6,0	4,0	-	1,0	1,5	3,0	1,0
Contents of dry substances, %	11,8	12	12	12	5	7,5	8	8
Kinematical viscosity, mm <sup>2</sup> /s <sup>2</sup> (while the temperature 6°C)	0,42	0,52	0,45	0,45	0,32	0,32	0,38	0,38

We have observed that for getting of galantine out of fish broth at the base of curd whey the optimal lasting of hydrolysis is 15 minutes and 30 minutes (table 1). While the longer lasting of hydrolysis the temperature of gelling is very low. Received facts give proof of the possibility of use broths from the herring wastes at the base of curd whey as the surface-active media while the production of emulsion products. At the result of research we have stated the optimal regimes of hydrolysis of collagen from the herring wastes while the use of the curd whey as the water environment: correlation of wastes of curd whey is 1:1, temperature of hydrolysis is 100°C, lasting of hydrolysis is 15 minutes. While the use of this broth there is got the emulsion with the thickest consistence.

The use of curd whey for getting fish broths is reasonable, because while this there is shorten the lasting of hydrolysis of collagen, what leads to the lowering of the production wastes. Besides, broths at the base of whey are notable for less expressed fish smell.

At the base of broths for the Pacific herring wastes, prepared with the use of curd whey, there were developed the recipes of sauces with the addition of sea cabbage and fern.

Thereby, in the result of researches there were defined optimal conditions of getting of the fish broths and influence of the different technological processes on their gelling behavior; there were developed the recipes of sauces at the base of the broths from the collagen-containing herring wastes; there was developed the technology

of preserves from herring in the different sauces, which are enriched with the vegetable raw and curd whey.

#### References

1. Bogdanov V.D., Saltanova N.S. Technology of salted pre-ripening herring // Fishing industry – 2005. – №1 – P. 64–65.
2. Bogdanov V.D. Fishing products with the regulated structure. – M.: World, 2005. – 310 p.
3. Bogdanov V.D., Safronova T.M. Builders and fishing compositions. – M.: VNIRO, 1993. – 172 p.
4. Chernega N.V. The development of technology of multicomponent canned food in the gel fills from the collagen-containing fish raw: Autoref. Dissertation of the candidate of technological sciences. – Stavropol, 2006. – 24 p.

---

The work is submitted to the International Scientific Conference «Modern problems of experimental and clinical medicine modern formation. Problems and solutions of a problem of agriculture economy and management theoretical and applied sociological, politological and marketing researches», Thailand, 20-30th on December, 2010, came to the editorial office on 17.11.2010.