Microbiological Method of the Honeydew Detection in Blends of Blossom and Honeydew.

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There are no universal express simple methods of honeydew detection in blossom honeydew sorts of honey, causing troublesome bees hibernating.

In 2005 while studying the anti-microbe activity of northern sorts of honey of Perm territory by the method of diffusion into agar, it was discovered that some samples stimulated test organism B.cereus ATCC 11778. It was stated that the zone of heavy growth around honey holes related to the increased content of manganese ions (Mn^{2+}). The similar effect was described in 1995 by the American scientists for some species Bacillus.

The sorts of honey, showing biological activity, in addition to the increased content of Mn^{2+}, had increased electrical conduction, pH, general acidity, comparative content of honeydew elements(HDE/P), darker colour, in comparison with native blossom sorts of honey. The content of Mn^{2+} wasn’t connected with a botanical and geographical origin. These specific features made us think that the increased content of Mn^{2+} in honey was connected with honeydew.

Due to the simple and cheap method since 2005 there has been a research of more than 400 Russian blossom honeys and blends of blossom and honeydew, “cement” honey of Perm territory, samples of commercial honey from Czechia, Austria, Poland, marked as forest, mixed forest and honeydew sorts. Effect of heavy growth of B.cereus is neatly connected with the results of sensory, microscopical, physicochemical analysis, in whole confirming the presence of honeydew. It is absent in sorts of honey, that have only one index among specific indexes of honeydew sorts: white honey (lime-tree honey), that have high electrical conduction and pH, blossom honey, that have high colour index.

Probably, the high content of Mn^{2+} is the universal feature of honeydew presence and microbiological method, based on the test-culture growth stimulation, can be a cheap and fast means for honeydew detection in blend sorts of honey.

Effect of heavy growth of B.cereus ATCC 11778 and some properties of honey

Honey's origin	Width of zone of heavy growth, mm	Mn^{2+} concentration in honey, mg/kg	Electrical conductivity, mS/sm	Amount of honeydew elements, %
Czech Republic, forest, 2006	10,5	14,10	0,826	4,4
Russia, Perm territory , 2005	9,5	11,90	0,690	19,3
Austria, forest 2006	9,5	11,55	1,068	3,6
Austria coniferous 2006	8,5	9,30	1,352	3,9
Russia, Perm territory, 2005	7,5	8,00	0,470	13,9
Russia, Perm territory, 2005	7,5	7,00	0,470	8,8
France, 2005	7,0	6,50	Not detected	35,0
Czech Republic, mixed forest, 2006	7,0	4,45	0,714	17,2
Russia, Perm territory, 2005	6,0	3,25	0,610	1,6
Russia, Perm territory, 2006	6,0	3,10	0,260	0,3
Russia, Perm territory, 2007	4,5	2,85	0,386	5,4
Russia, Perm territory, 2006	6,0	2,35	0,334	16,2
Russia, Perm territory, 2006	6,0	2,15	0,237	5,1
Russia, Perm territory, 2005	5,0	2,00	0,220	6,7
Russia, Perm territory, 2005	3,0	1,70	0,260	0,6
Russia, Perm territory, 2005	3,0	1,20	0,240	0,9
Russia, Perm territory, 2006	Not significant	0,95	0,360	3,9
Russia, Perm territory, 2007	Not significant	0,95	0,292	8,1
Russia, Perm territory, 2006	Not significant	0,90	0,240	24.0
Russia, Perm territory, 2007	Not significant	0,90	0,166	6,4
Russia, Perm territory, 2007	Not significant	0,55	0,250	0,6
Russia, Perm territory, 2005	None	0,35	0,150	0,9