



Development, integration and dissemination of animal-based welfare indicators of pain, in commercially important husbandry species, with special emphasis on small ruminants, equidae and turkeys

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Executive Summary

The European Animal Welfare Indicators Project (AWIN) addressed the development, integration and dissemination of animal-based welfare indicators with emphasis on pain assessment and pain recognition. AWIN research objectives were carried out in four complementary workpackages (WP1, WP2, WP3 and WP4). The project focused on five commercially important species: sheep, goats, horses, donkeys and turkeys. All workpackages carried out research and dissemination with two or more of the key species with some outputs relevant to all animals.

WP1 developed practical, science-based, welfare assessment protocols, including pain indicators, for the project species. WP1 developed a two-step approach to animal welfare assessment and this process is carried through the resulting protocols which are all freely available online. AWIN translated the welfare assessment protocols into interactive apps to make data collection easy, reliable and available immediately as a management tool to help with decisions at farm level, promoting mechanisms for data storage and data-analysis. The 'I-Watch-Turkey' app, based on an AWIN-developed 'transect' methodology, was tested on turkey farms in Europe, North America and Brazil. WP1 contributed to an EFSA Scientific Opinion on Sheep Welfare and on a European Commission Report on Equine Welfare.

WP2 studied the impact of diseases and pain on animal welfare and, in conjunction with WP4, developed interactive apps to facilitate data collection, data storage and data analysis. In goats and sheep the focus was on pain assessment and mitigation in animals with mastitis, pregnancy toxaemia and foot-rot. Conditions which caused lameness in goats were also studied. The 'WelGoat' app, to assess lameness was developed, by WP2 and WP4. Strategies to measure and control pain during lamb castration and tail-docking and goat disbudding were investigated. In horses, studies were carried out to mitigate pain post-castration and during laminitis. Partners also provided a report on the barriers to the implementation of pain mitigation protocols. WP2, WP1 and WP4 worked together to develop the 'Horse Grimace Scale' app was developed, which accounted for more than 5,000 downloads from the Google Play Store.

WP3 examined the effects of different prenatal environments, studying animal density, group size and the quality of human and animal interactions in pregnant sheep and goats. Welfare indicators and developmental outcomes were assessed in the offspring of the studied animals. WP3 found that stocking density affected pregnant ewe and pregnant goat behaviour and pregnant ewe physiology. Stocking density of pregnant animals also affected the fetuses, behaviour of the offspring, maternal behaviour and placental morphology. Prenatal management strategies were studied in mares and their foals. Group dynamics in group-housed horses affected pregnancy and mares' physiological measures of stress.

WP4 created the Animal Welfare Science Hub (www.animalwelfarehub.com) to disseminate our scientific findings, promoting transparency and synergies among stakeholders and interested parties. The Hub is a global research and education repository for up-to-date scientific knowledge in animal welfare. Outcomes from the AWIN project were disseminated via the Hub through the use of interactive learning objects (LOs) and stakeholder engagement activities. This is the first organized initiative to combine animal welfare science with innovative media and synergic networking. LOs were produced covering the AWIN project activities, including pain assessment, prenatal environment, welfare indicators and assessment protocols, among many others. The Animal Welfare Science Hub is the largest peer-reviewed portal in animal welfare science in the world. Interactions with stakeholders and interested parties were very effective. AWIN delivered talks to more than 30,000 participants and was present in events with audiences exceeding 253,000 people. More than 29 peer-reviewed articles have been published so far and an equal number have been recently submitted for publication.

The Animal Welfare Indicators Partners decided to remain together as a network of excellence, focusing on the development and validation of science based welfare indicators and also on the strategy to provide outstanding opportunities to foster effective communication among stakeholders and interested parties, through the Animal Welfare Science Hub.