Update of feather picking in psittacine birds

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Introduction & objectives

The members of the class Aves belonging to the order of the *Psittaciformes* are characterized by having a large brain, curiosity, learning ability during his long life, great adaptability to changing environmental conditions and a very complex social behaviour .

Two of the most severely restricted behavioral conducts in captivity are foraging and locomotion, which are extremely important. Restricting them is the reason why psittacine birds in captivity are more likely to develop a wide range of behavioral problems, such as feather picking .

One of the aims of this study is to evaluate and compare the contents of different literature sources found, and develop an objective and constructive criticism of the quality of existing information about feather picking.

On the other hand, the second aim is the analysis of 4 themes that the author believes are important to develop an opinion in reference to information published. The themes are: environmental enrichment, management and training; feather picking patterns and more susceptible species; feather scoring system and most commonly psychoactive drugs and other treatments used in avian patients.

Material & Methods

This study is based on information collected through several portals such as pubmed and sciencie direct, and popular science books related to the subject. The comparative analysis has been limited to a specific period of time ranging from 2000 to 2015.

The criteria used for obtaining the information are on the one hand, the inclusion of review articles, clinical cases, pharmacological studies and book chapters and on the other hand, the bibliographic exclusion of any topic related to organic/medical causes.

It will be elaborated a table with this information in which the topics will be collected by its importance and special relationship with feather picking.

It will be designed a results table where every source will be analyzed and classified, mentioning if the listed topics appears or not. In affirmative case, it will be considered whether the information is general or specific and referred to a particular specie or species in general. In the table, each source may be added as many times as mentioned.

Results

In this study we included a total of 26 bibliographical sources, of which 3 are book chapters and 23 are articles.

Table 1. Analytical results of the topics covered in the various literature sources.

	General information	Concrete information	Species in general	Only one species
Feather picking	16	10	12	9
Enrichment	12	7	15	
Feather picking patterns		3	3	3
Feather scoring system		2	2	
Biology/physiology in the order Psittaciformes	4	6	9	
Psychoactive drugs	6	5	6	5
Studies, protocols and pharmacological treatments	2	5	3	3
Comparison with other species disorders	8	4	8	
Comparison with human disorders	4	7	8	
Management	7	3	9	
Measurement of different parameters (behavior, stress, biochemical, ...)	2	12	20	14
Training	2	1	3	
Total	63	65	98	34

Discussion

Environmental enrichment, management and training

Image 1. Different examples of environmental enrichment. There are many different sources to make caged parrots develop several activities.

Feather picking patterns and more susceptible species

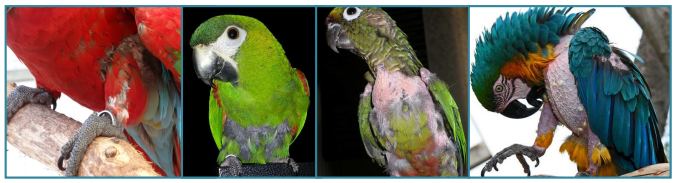

Image 2. From left to right, different cases of feather plucking from low to high severity level .

Image 3. From left to right, the three more susceptible species, African grey parrot (*Psittacus erithacus*), cockatoos (*Cacatua alba*) and macaws (*Ara ararauna*).

Feather scoring system

There are two feather scoring systems created under the need to assess objectively the degree of feather picking suffered by different individuals. The first created for Meehan *et al.* (2003) and the second created for van Zeeland *et al.* 2012. The two systems can be used interchangeably, but the second can detect real changes in earlier stages.

Most commonly psychoactive drugs and other treatments used in avian patients

Class	Drug
Benzodiazepines	Diazepam
Butyrophenones	Chlorpromazine and haloperidol
Hormones and GnRH analogues	hCG , leuprolide (injectable) and deslorelin (patches)
Tricyclic antidepressants	Clomipramine, doxepin and amitriptyline
Selective serotonin reuptake inhibitors	Fluoxetine and paroxetine
Opioid antagonists	Naltrexone
Opioid agonists	Butorphanol

Table 2. Psychoactive drugs and other treatments used in avian patients with feather picking. The drugs colored in red have not been studied but they are recommended.

Conclusions

- There is much information about the feather picking, however the quality of this is lower than expected.
- The belief of thinking that is an exploited topic of which new information can not be extracted is wrong. There are many fronts in which you can research.
- The most of the bibliography sources often talk generally about the order *Psittaciformes*, without differentiating between species.
- The drug treatment information is scarce. There are few data regarding effective doses, predictable therapeutic effects, pharmacokinetics and toxicity.
- There is no specific information for each species in relation to their biology and behavior.
- In most of the studies species-specific made it has been used those species who are kept in larger numbers in captivity, to the detriment of those that are only found in private collections and zoos, such as several species of the genus *Platycercus* and *Brotogeris* .
- Referring to environmental enrichment as key point of treatment or prevention of disorders such as feather picking, more experimental studies are needed to clarify an issue that has been based more on empirical than scientific findings.